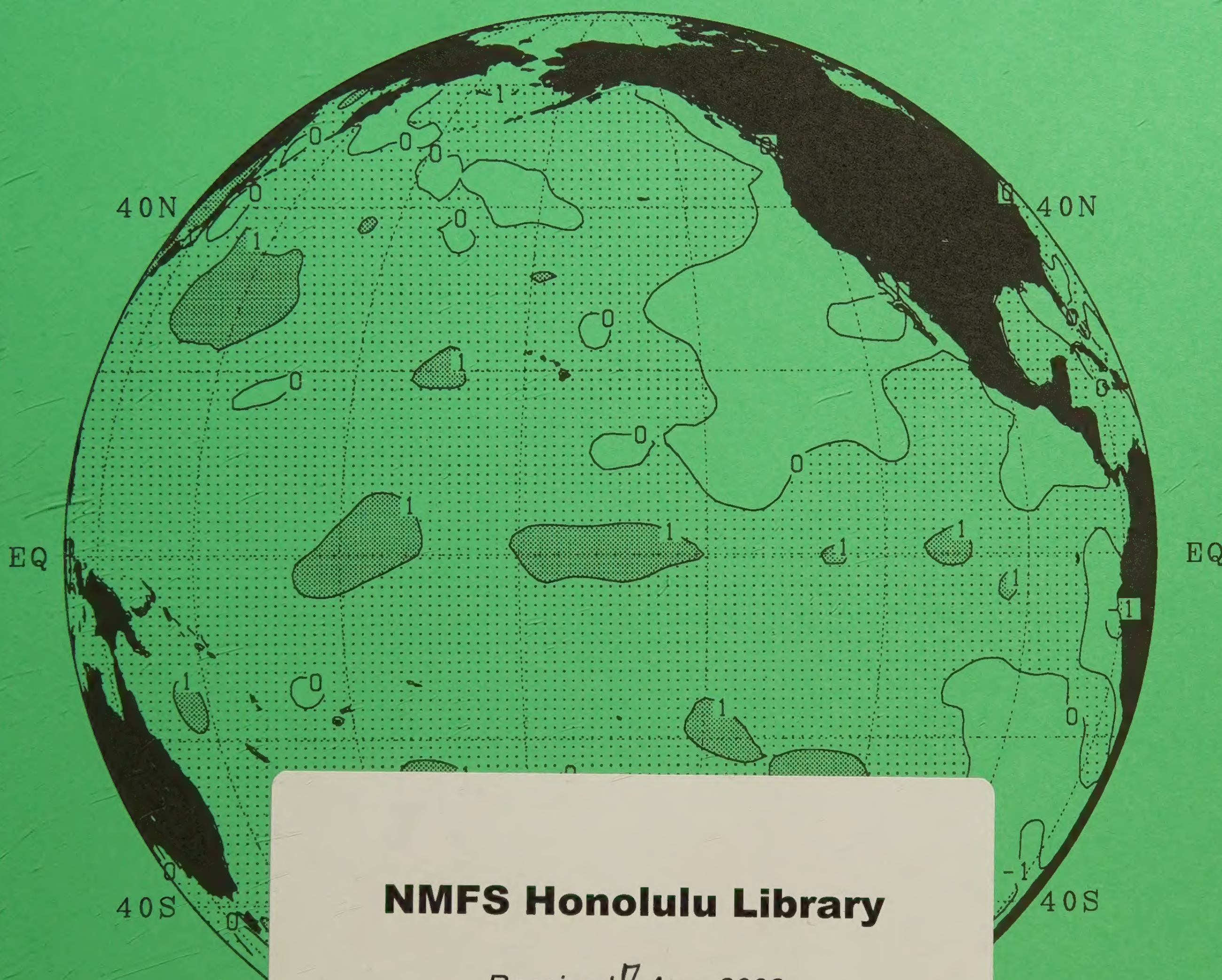
気象庁海洋月報

Monthly Ocean Report
June 2002 (No. 114)



Climate and Marine Department

Japan Meteorological Agency

気象庁 気候・海洋気象部

平成14年6月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋気象情報室で作成しています。
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Monthly Ocean Report is prepared by the Office of Marine Prediction, Climate and Marine Department, Japan Meteorological Agency.

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表紙は、2002年6月の太平洋の月平均海面水温偏差図です。
陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for June 2002 in the Pacific Ocean.
Areas of positive anomalies are shaded.

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海況の特徴（２００２年６月）

日本近海の海況

海面水温は、宗谷海峡、津軽海峡と日本海から東シナ海北部にかけて平年より１℃以上高く、山陰沖では+２℃を超える正偏差が見られた。一方、北海道太平洋岸から三陸沖にかけては平年より 0.5℃以上低かった（第４図）。

黒潮は、四国から紀伊半島にかけて接岸した後、上・中旬は東海沖を小さく蛇行して東に流れ、八丈島付近で北北東に向きを変えて房総半島に接岸した後、東に流れていた。下旬は東海沖を東に流れた後、八丈島付近で向きを変え、房総半島沖を北東に流れていた（第９図）。

太平洋の海況

太平洋赤道域の海面水温は、130° Eから150° Eにかけてと160° Eから100° Wにかけて平年より0.5℃以上高かった。ペルー・エクアドル沖では平年より0.5℃以上低かった。

北太平洋の海面水温は、20° Nから 35° Nの 145° Eから 170° E と 20° N、170° W付近で+１℃を超える正偏差が見られた。一方、20° Nから 40° Nの 140° W以東では平年より 0.5℃以上低かった（第１７図）。

Highlights June 2002

Seas adjacent to Japan

SSTs were more than 1℃ above normal in the Soya Straits, in the Tsugaru Straits and from the Japan Sea to the northern part of the East China Sea. Positive SST anomalies exceeding +2℃ were found off Sanin. SSTs were more than 0.5℃ below normal in seas from south of Hokkaido to off Sanriku (Fig. 4).

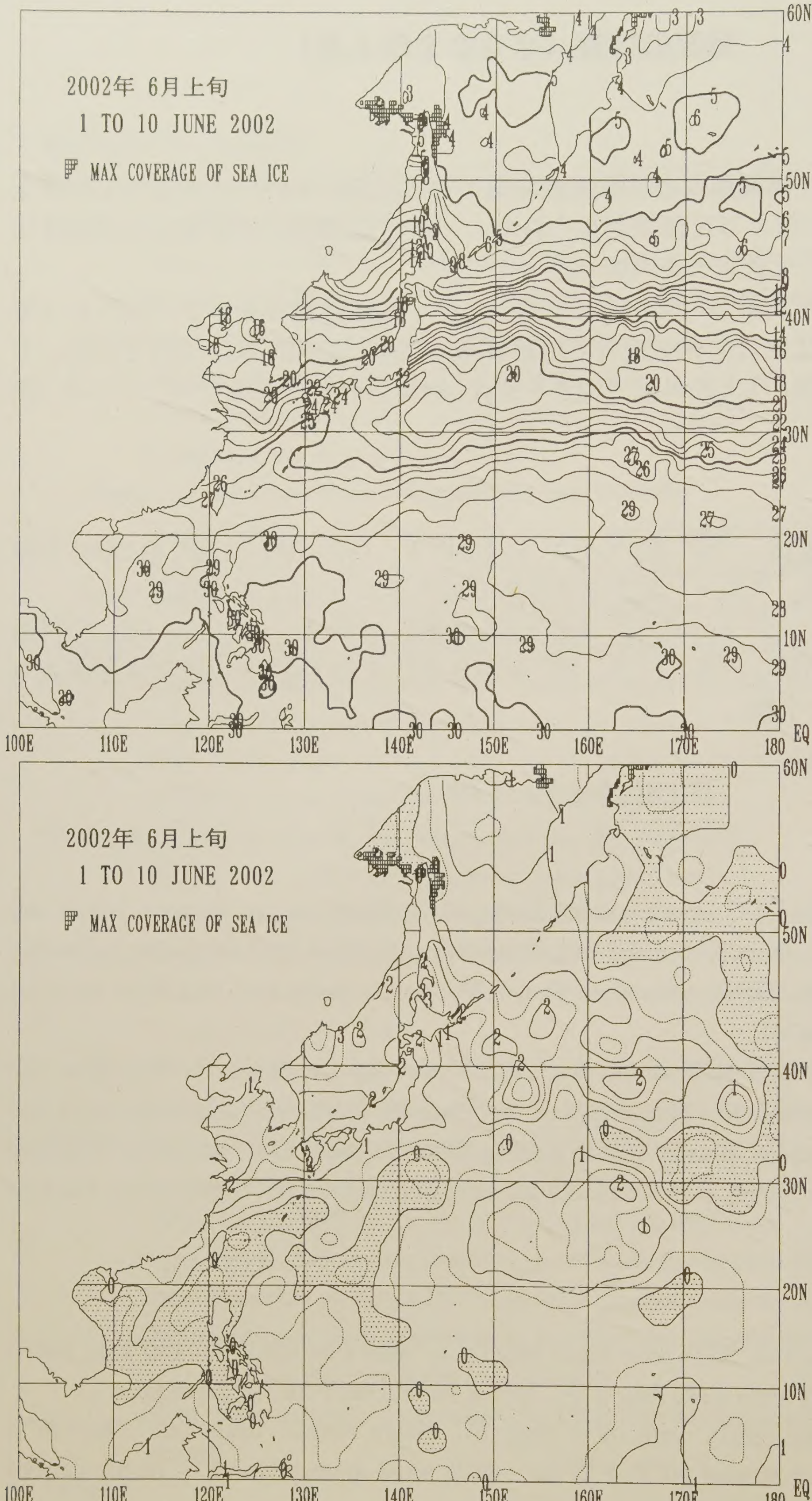
The Kuroshio flowed close to coasts from Shikoku to the Kii Peninsula throughout the month. In the first and second 10 days, it flowed eastward off Tokai with small meanders and turned NNE-ward near Hachijo Island. After passing close to the Boso Peninsula, it flowed eastward. In the rest of the month, it flowed eastward off Tokai and turned NE-ward near Hachijo Island (Fig. 9).

Pacific Ocean

In the equatorial Pacific, SSTs were more than 0.5℃ above normal from 130°E to 150°E and 160°E to 100°W. SSTs were more than 0.5℃ below normal off Peru and Ecuador.

In the North Pacific, SSTs were more than 1℃ above normal from 145°E to 170°E between 20°N and 35°N and around 20°N, 170°W. SSTs were more than 0.5℃ below normal east of 140°W between 20°N and 40°N (Fig. 17).

Ten-day mean SST & Anomalies



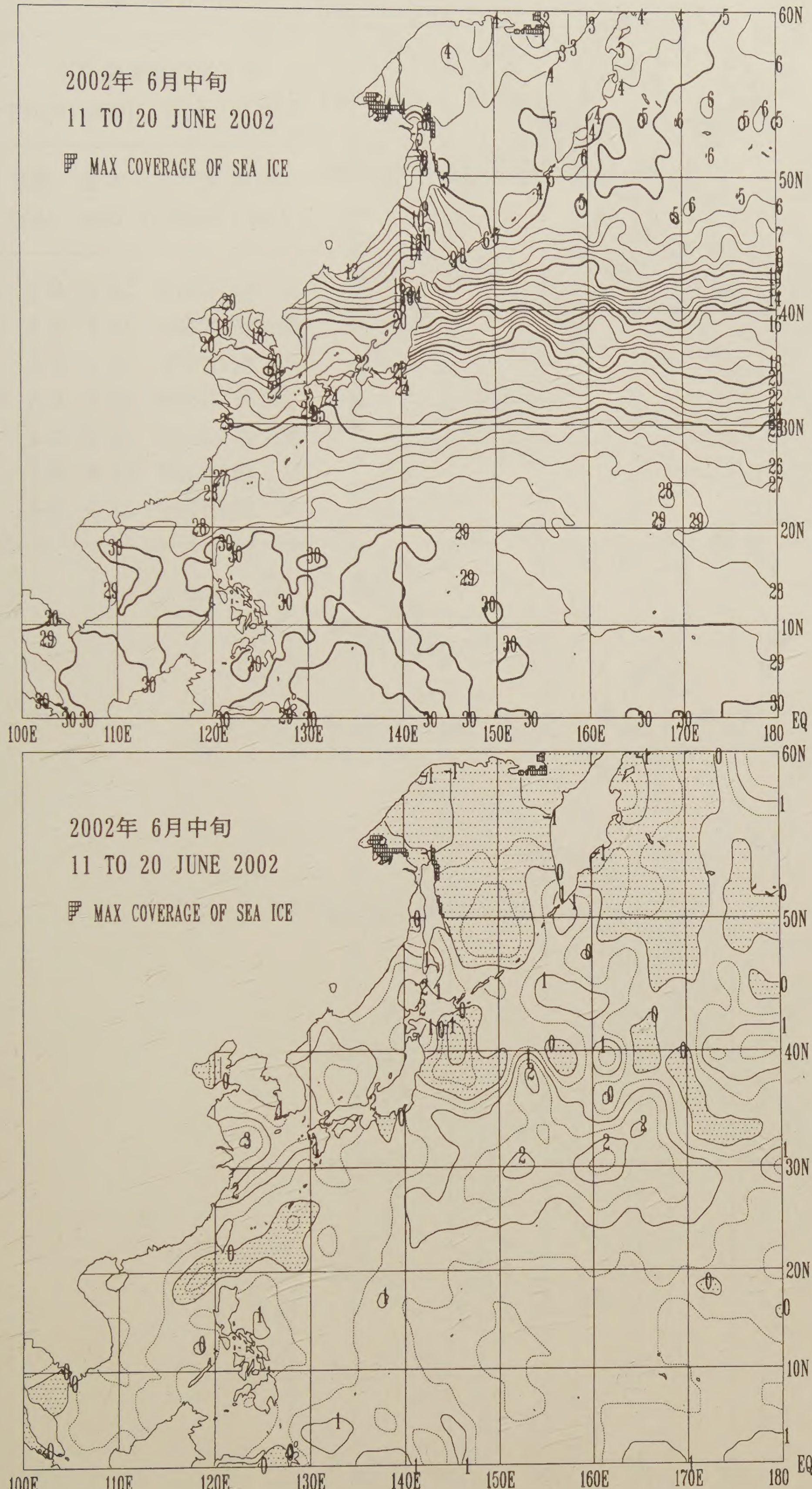
旬平均沿岸水温 (℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣 (47918)	27.0	0.0
御前崎 (47655)	21.2	0.6
八丈島 (47678)	23.3	1.2
小名浜 (47598)	14.7	0.1
宮　古 (47585)	13.2	1.4
江　差 (47428)	16.0	2.3
浜　田 (47755)	21.3	1.4

第1図 北西太平洋旬平均海面水温図 (上) 及び偏差図 (下) (2002年 6月上旬)

Fig. 1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in JUN 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Ten-day mean SST & Anomalies

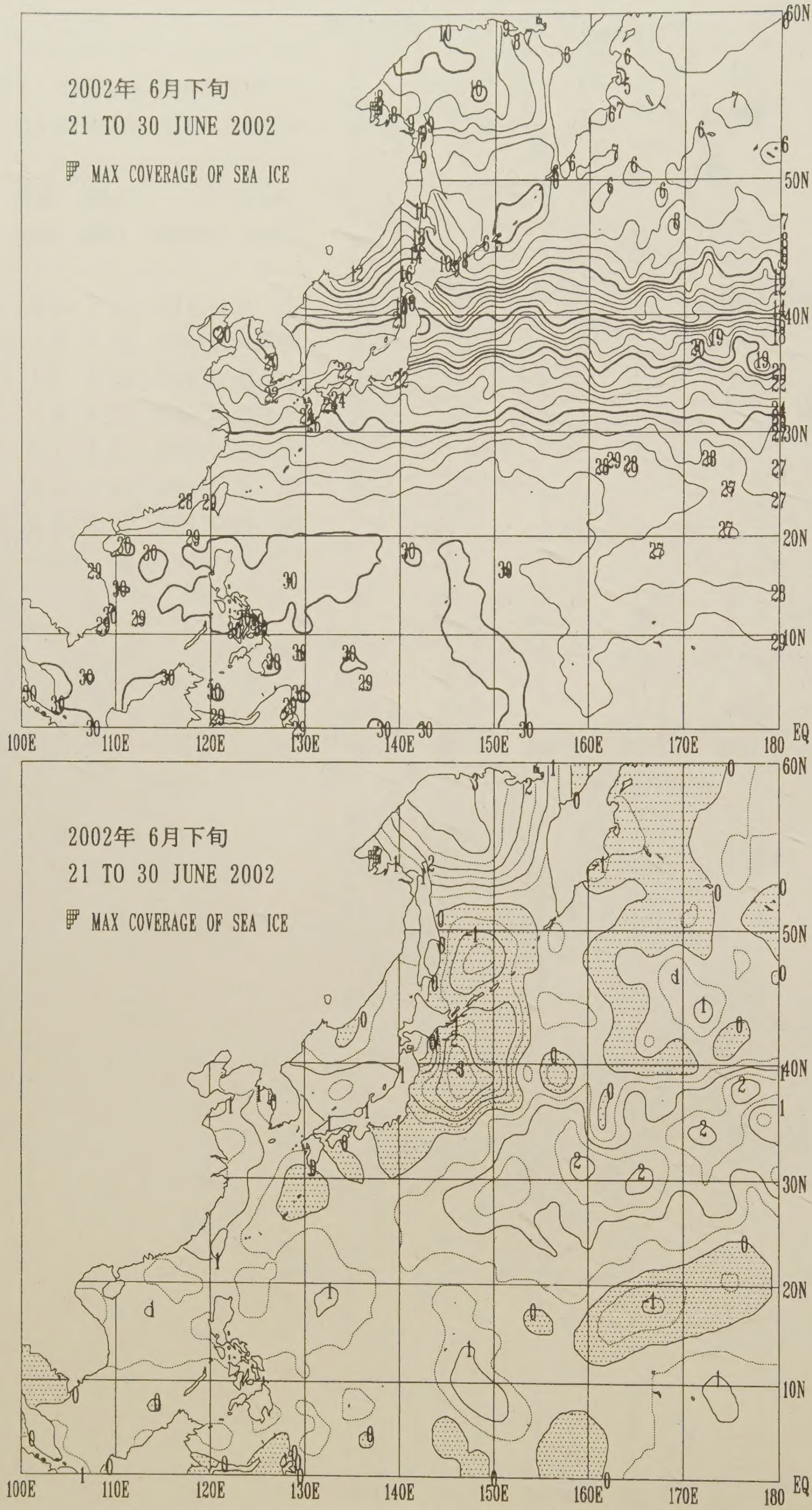


第2図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(2002年 6月中旬)

Fig. 2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in JUN 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	27.5	-0.2
御前崎(47655)	21.2	0.1
八丈島(47678)	23.6	1.2
小名浜(47598)	15.3	0.3
宮　古(47585)	14.0	1.3
江　差(47428)	16.2	0.8
浜　田(47755)	23.3	2.4

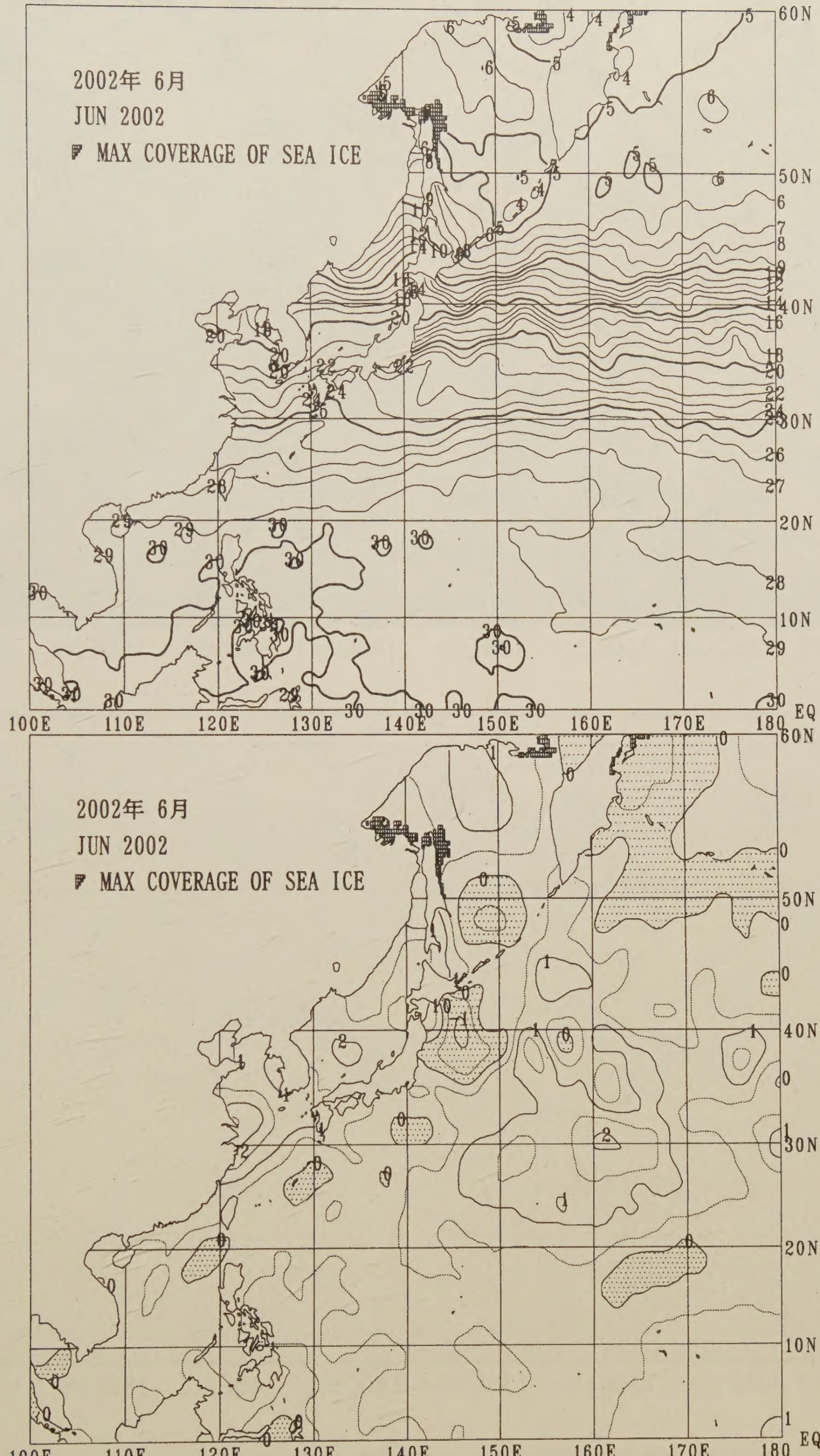


旬平均沿岸水温(℃)
Coastal Water Temperature

地 点 名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	28.2	-0.2
御前崎(47655)	20.9	-0.6
八丈島(47678)	23.2	0.0
小名浜(47598)	16.5	0.6
宮　古(47585)	13.3	-0.4
江　差(47428)	17.3	0.7
浜　田(47755)	22.8	1.2

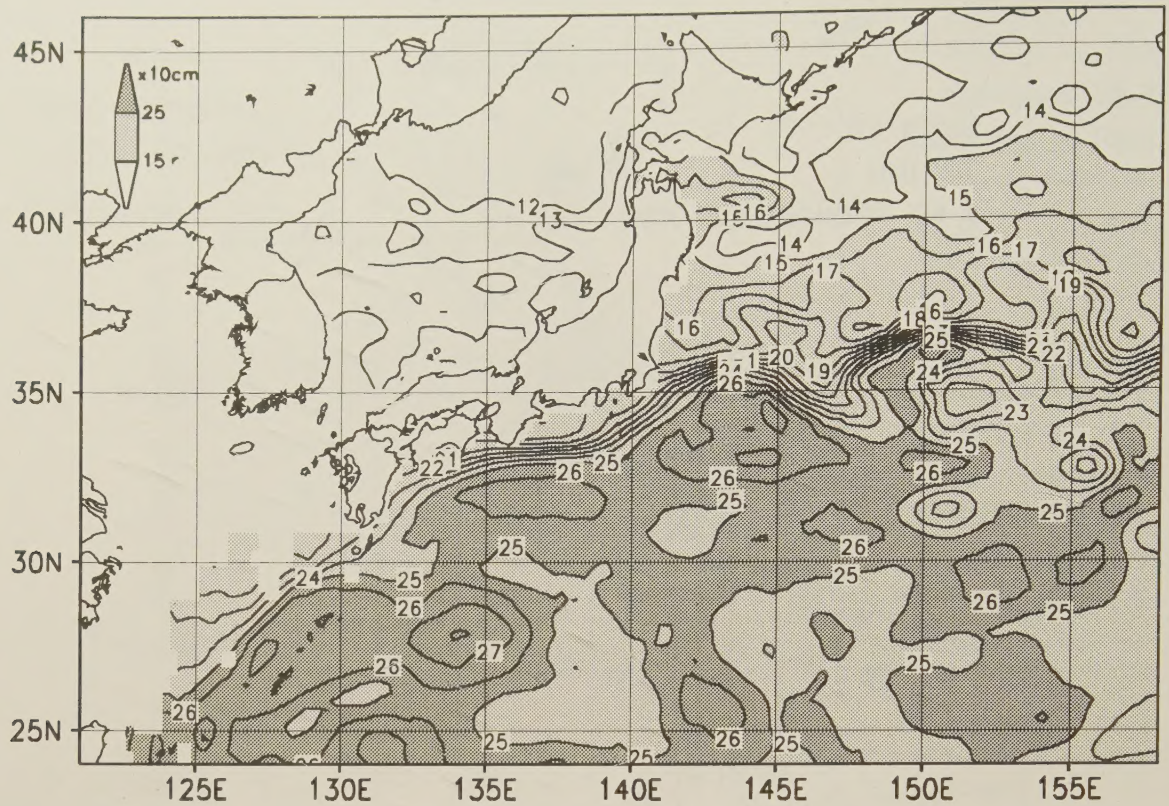
第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下) (2002年 6月下旬)

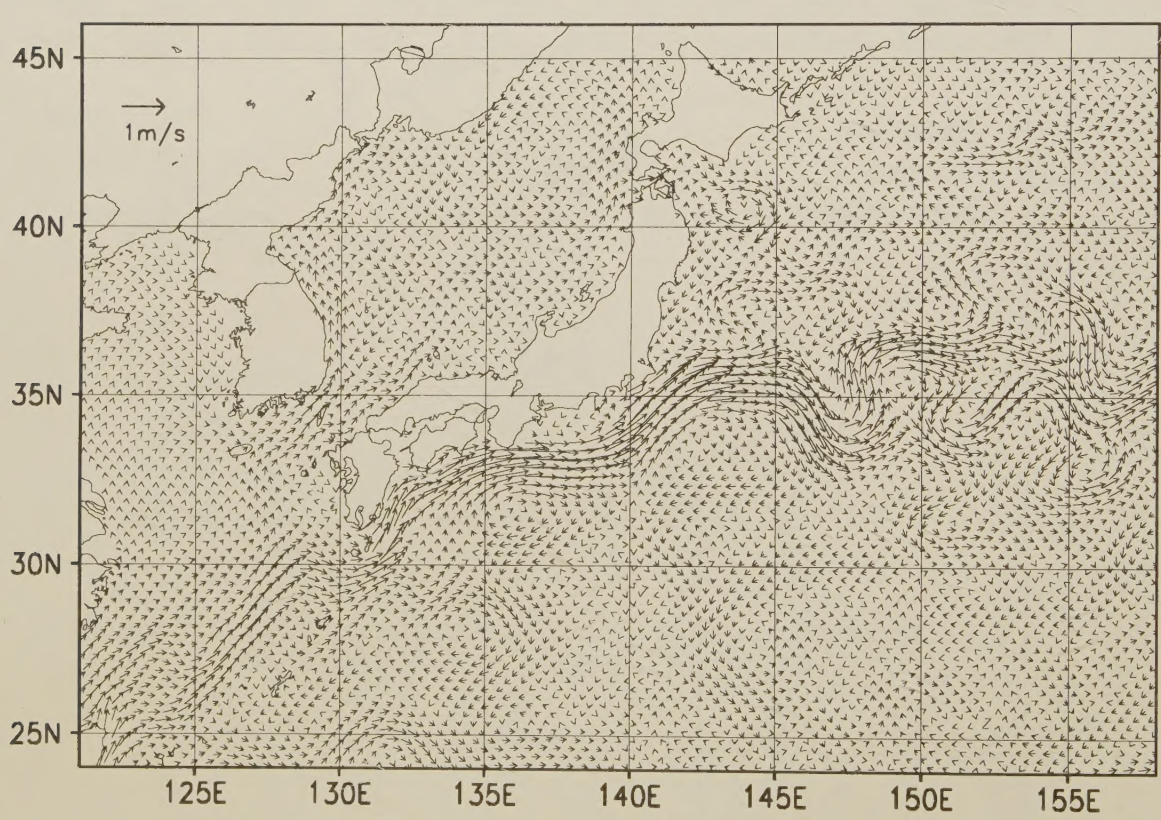
Fig.3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in JUN 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



第4図 北西太平洋月平均海面水温図(上)及び偏差図(下)(2002年 6月)

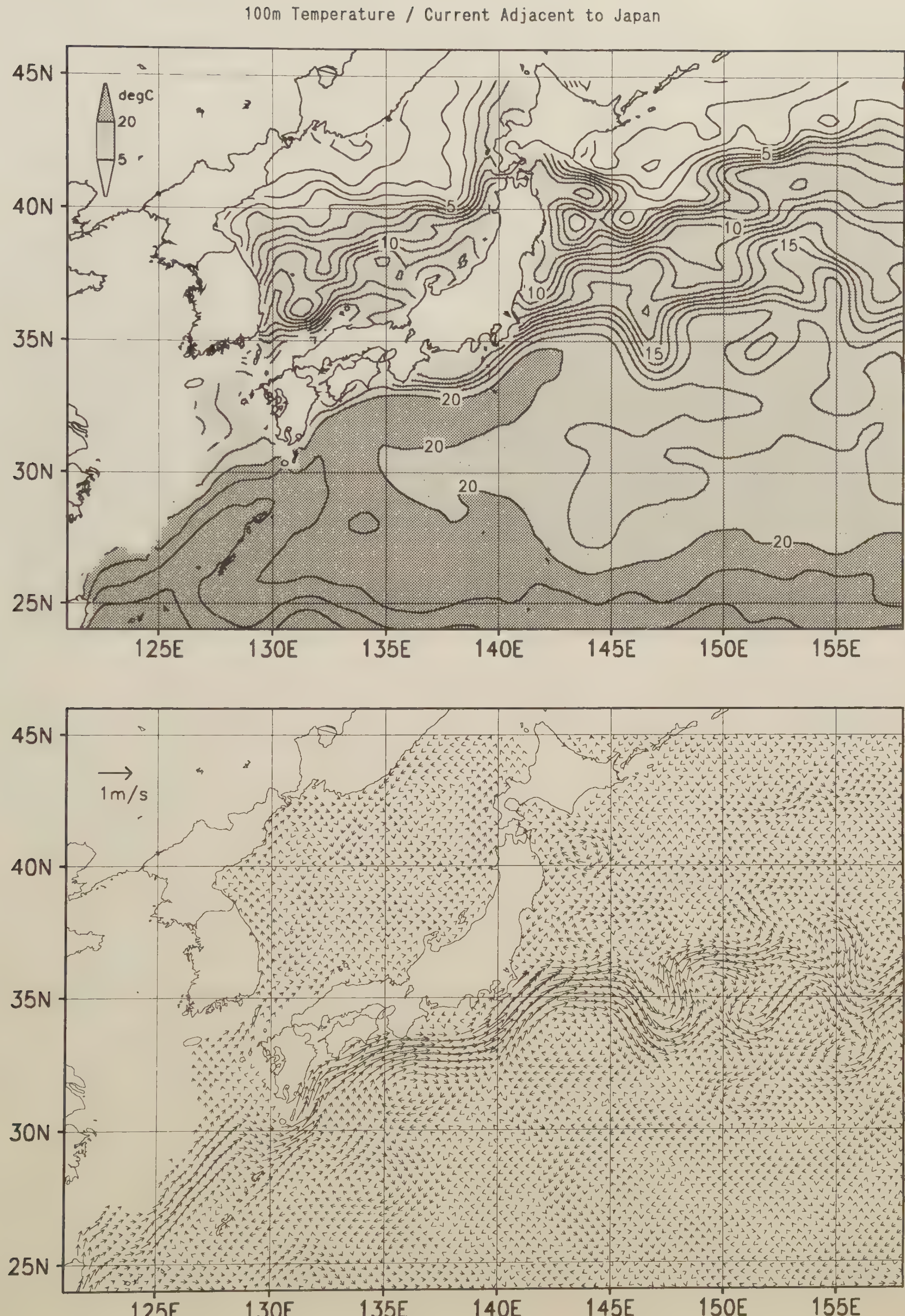
Fig. 4 Monthly mean SST (top) and anomalies (bottom) in the western North Pacific for JUN 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.





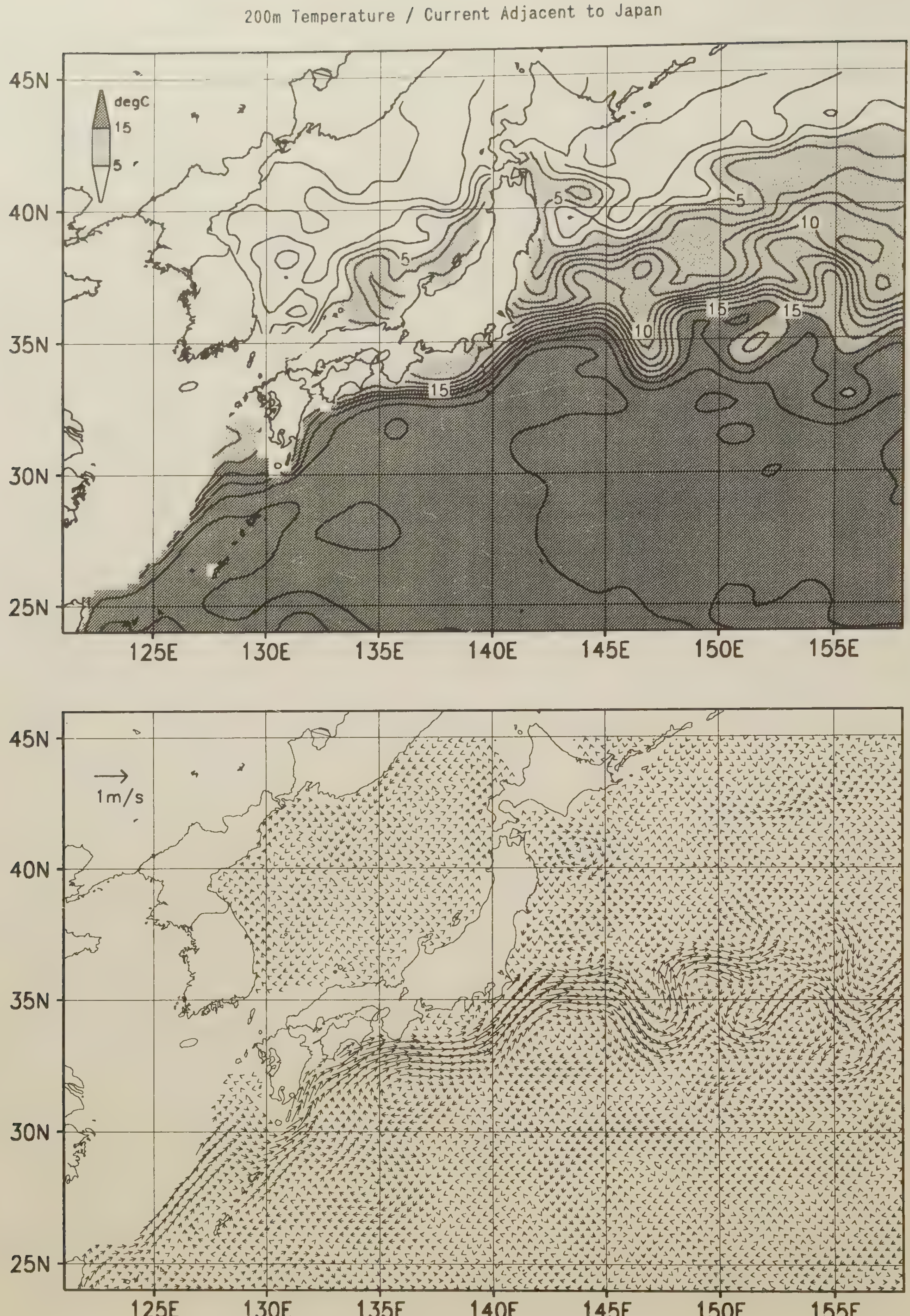
第 5 図　日本近海月平均海面高度分布図 (上) と海面海流図 (下)（2002 年 6 月）
（海洋総合解析システムによる）

Fig. 5　Monthly mean sea surface height (top) and current (bottom) in seas adjacent to Japan for June 2002. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



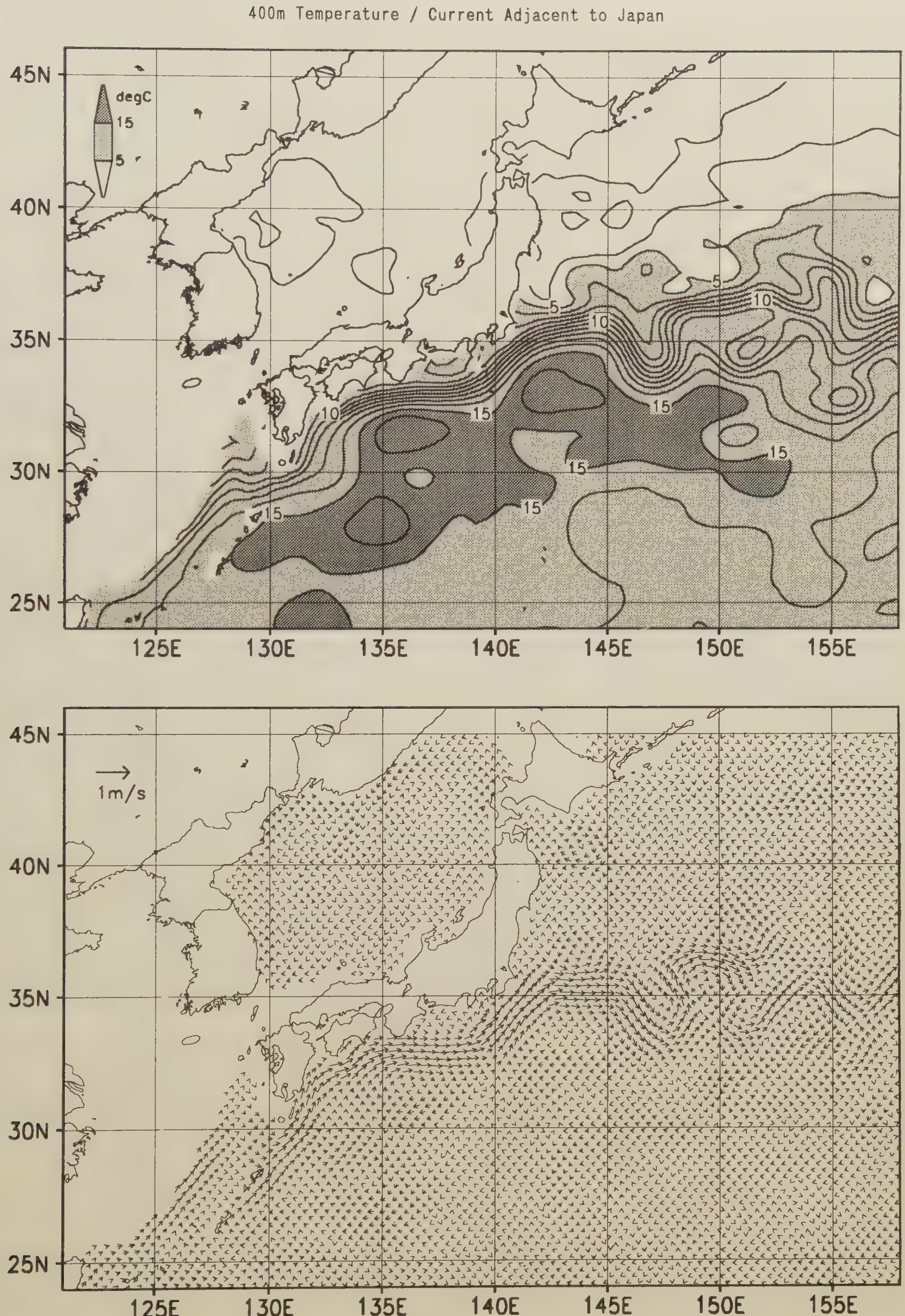
第 6 図　日本近海月平均表層水温図（上）と表層海流図（下）　（深さ 100 m）　（2002 年 6 月）
（海洋総合解析システムによる）

Fig. 6　Monthly mean subsurface (100 m) temperature (top) and current (bottom) in seas adjacent to Japan for June 2002. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



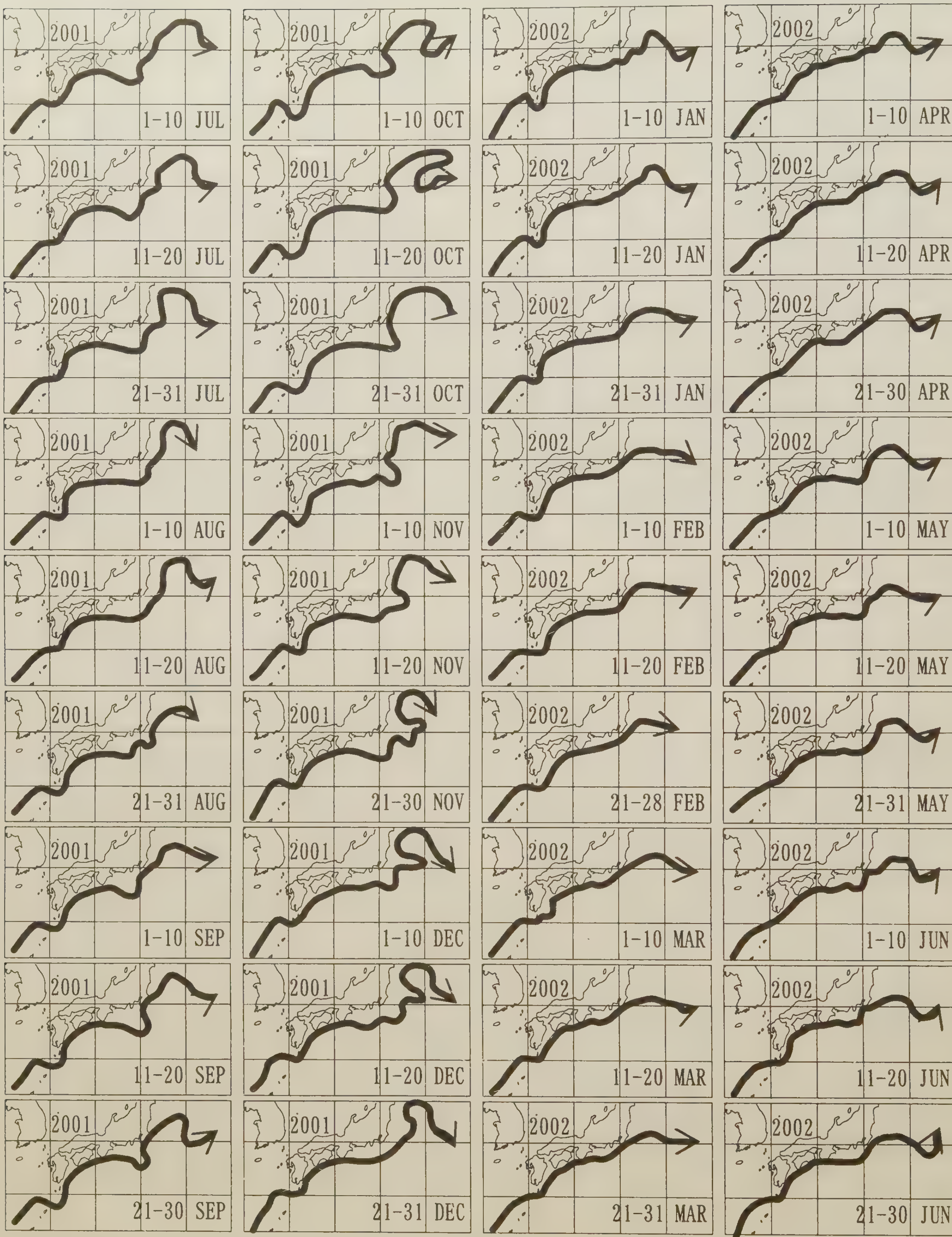
第 7 図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 200 m）（2002 年 6 月）
（海洋総合解析システムによる）

Fig. 7　Monthly mean subsurface (200 m) temperature (top) and current (bottom) in seas adjacent to Japan for June 2002. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



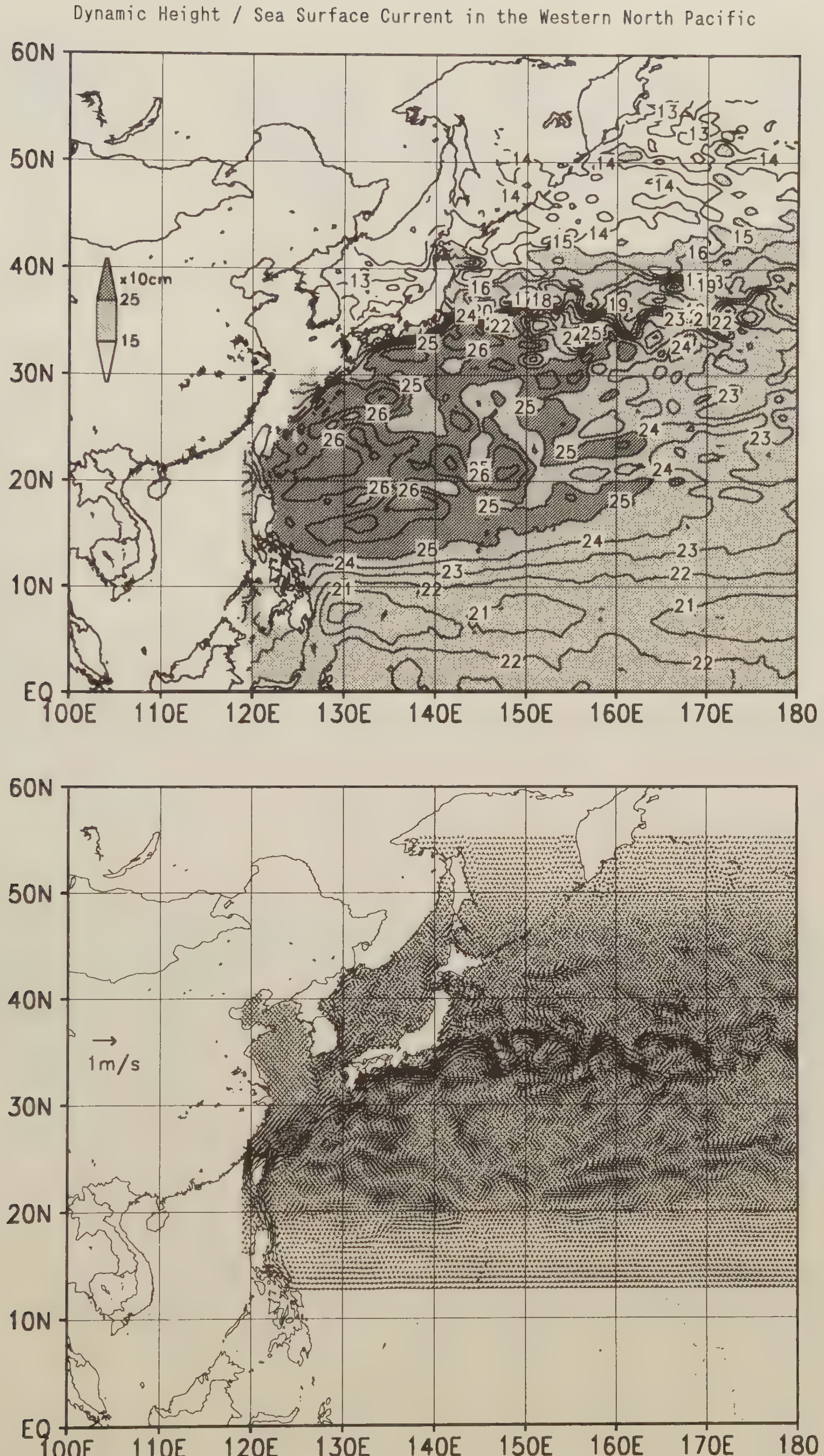
第8図　日本近海月平均表層水温図（上）と表層海流図（下）（深さ 400 m）（2002 年 6 月）
（海洋総合解析システムによる）

Fig. 8　Monthly mean subsurface (400 m) temperature (top) and current (bottom) in seas adjacent to Japan for June 2002. Contour interval is 1 ℃ (top). (calculated by the Ocean Comprehensive Analysis System)



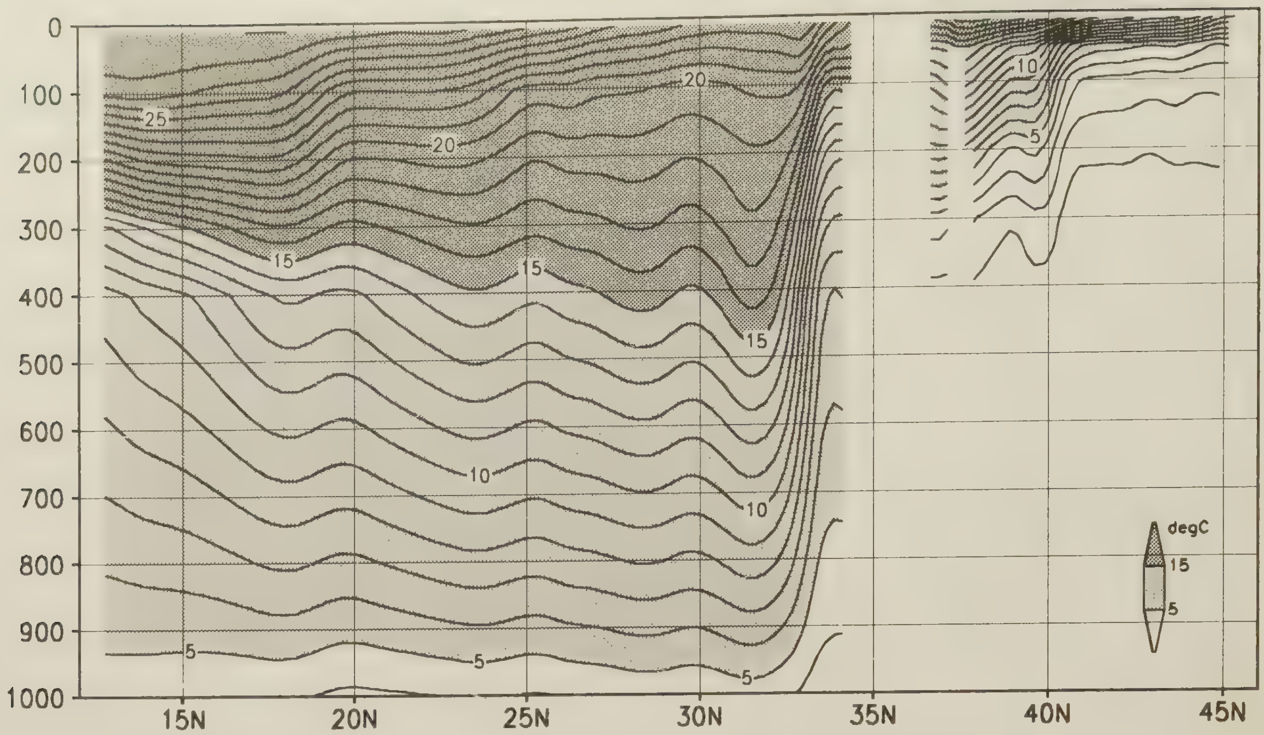
第9図 旬別黒潮流軸図

Fig. 9 Location of the Kuroshio axis



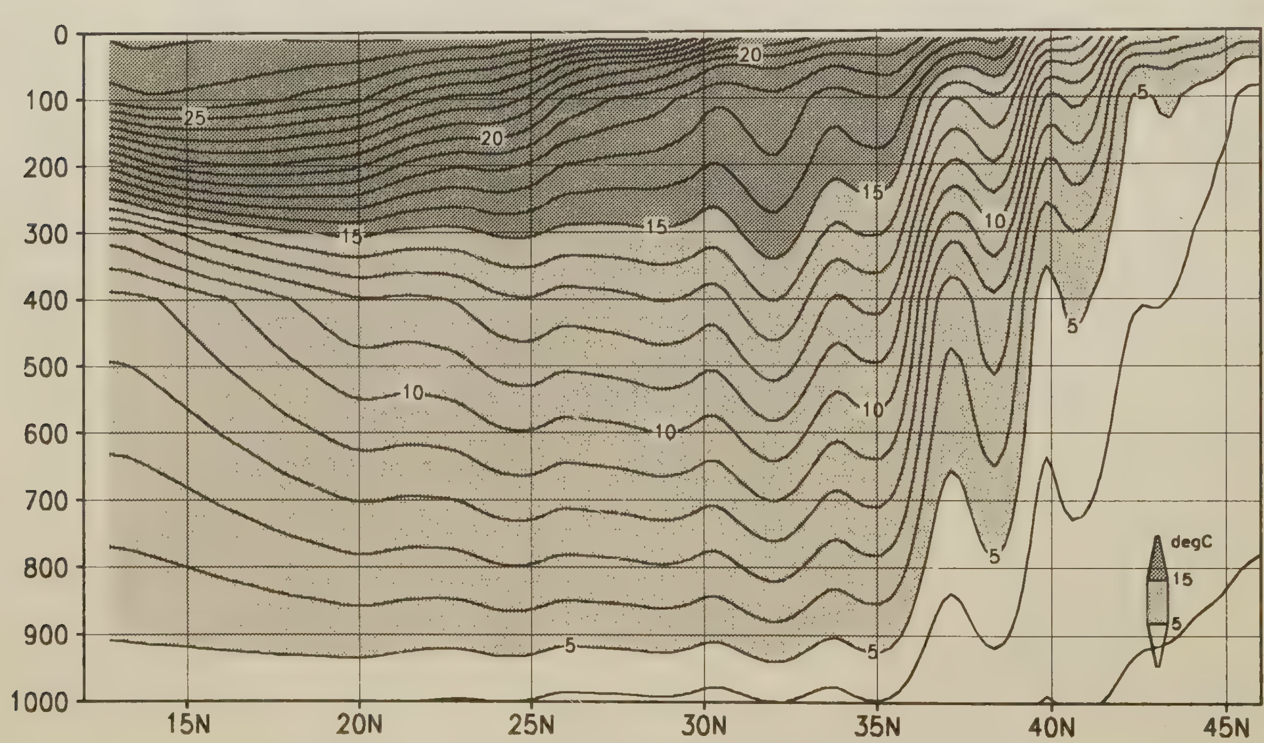
第 10 図　北西太平洋月平均海面高度分布図 (上) と海面海流図 (下) (2002 年 6 月)
(海洋総合解析システムによる)

Fig. 10　Monthly mean sea surface height (top) and current (bottom) in the western North Pacific for June 2002. Contour interval is 10cm (top). (calculated by the Ocean Comprehensive Analysis System)



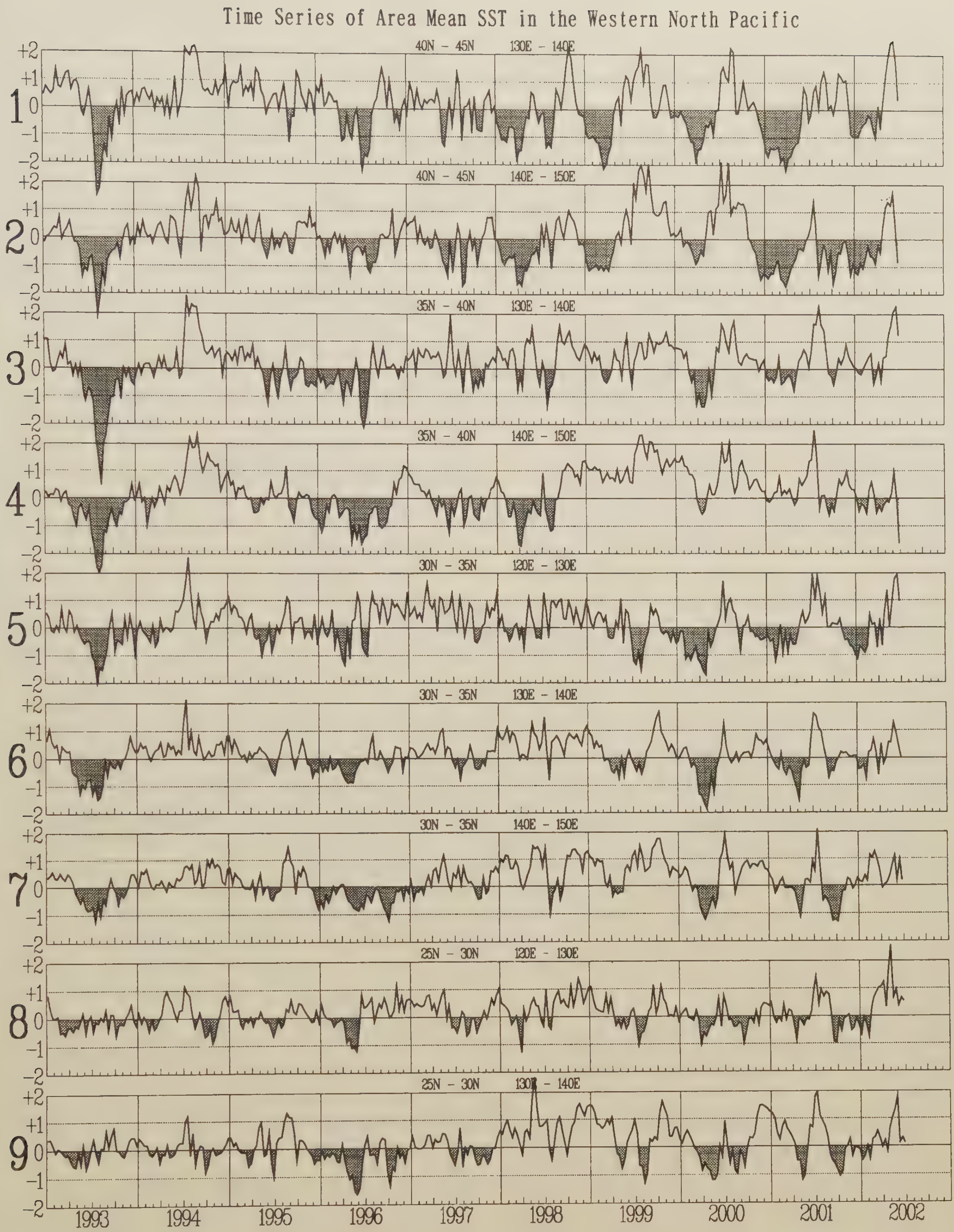
第 11 図　東経 137°線に沿う月平均表層水温の鉛直断面図 （2002 年 6 月）
（海洋総合解析システムによる）

Fig. 11　Vertical cross section of monthly mean temperature along 137 °E for June 2002. Contour interval is 1 °C. (calculated by the Ocean Comprehensive Analysis System)



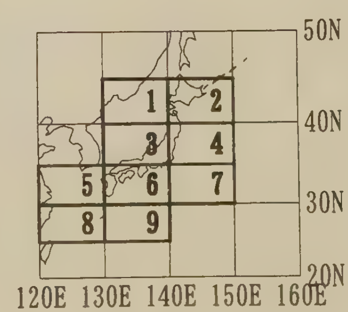
第 12 図　東経 165°線に沿う月平均表層水温の鉛直断面図 （2002 年 6 月）
（海洋総合解析システムによる）

Fig. 12　Vertical cross section of monthly mean temperature along 165 °E for June 2002. Contour interval is 1 °C. (calculated by the Ocean Comprehensive Analysis System)

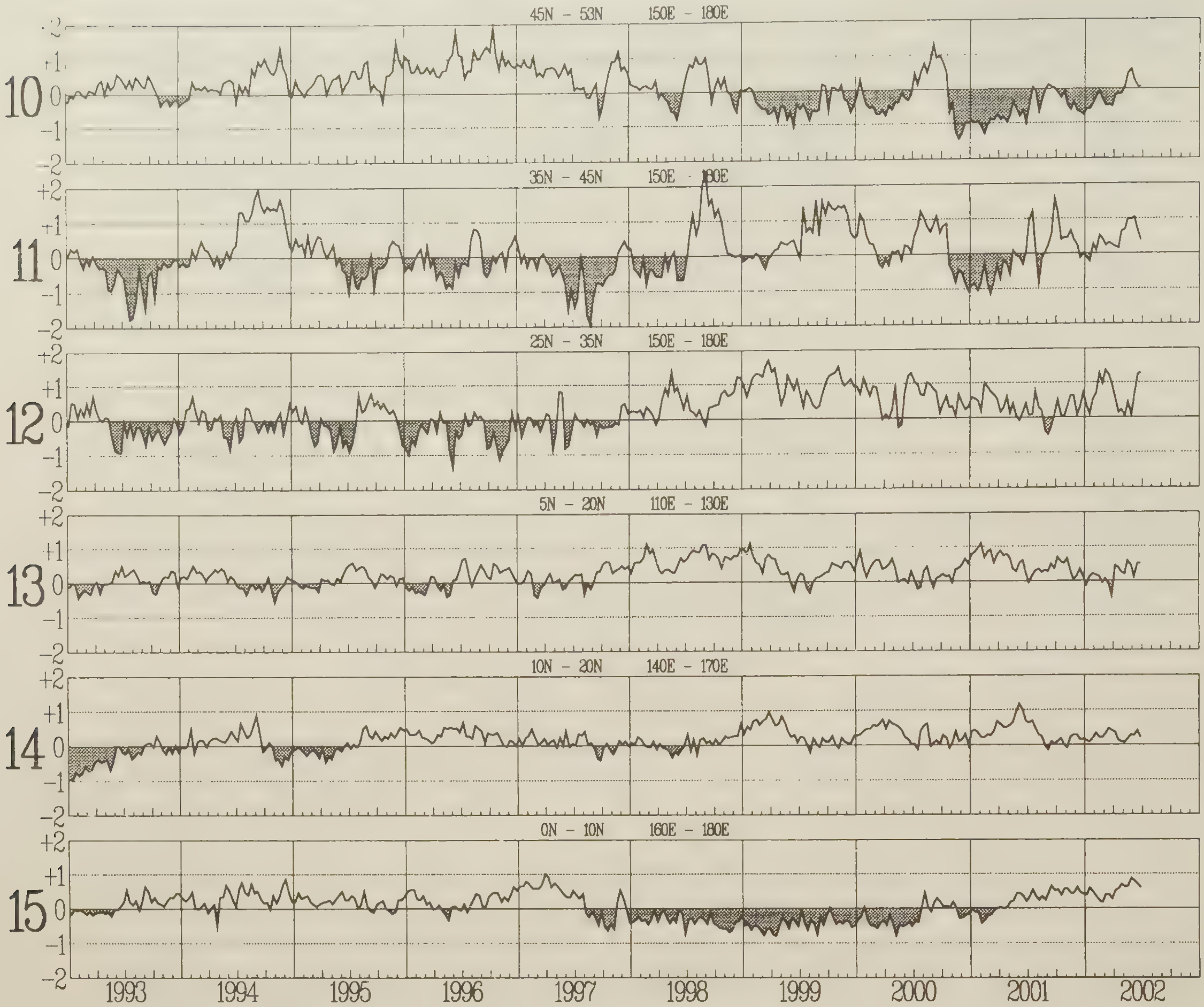


第13図　海域別旬平均海面水温平年偏差時系列図

Fig. 13 Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

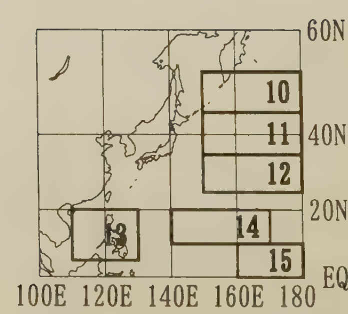


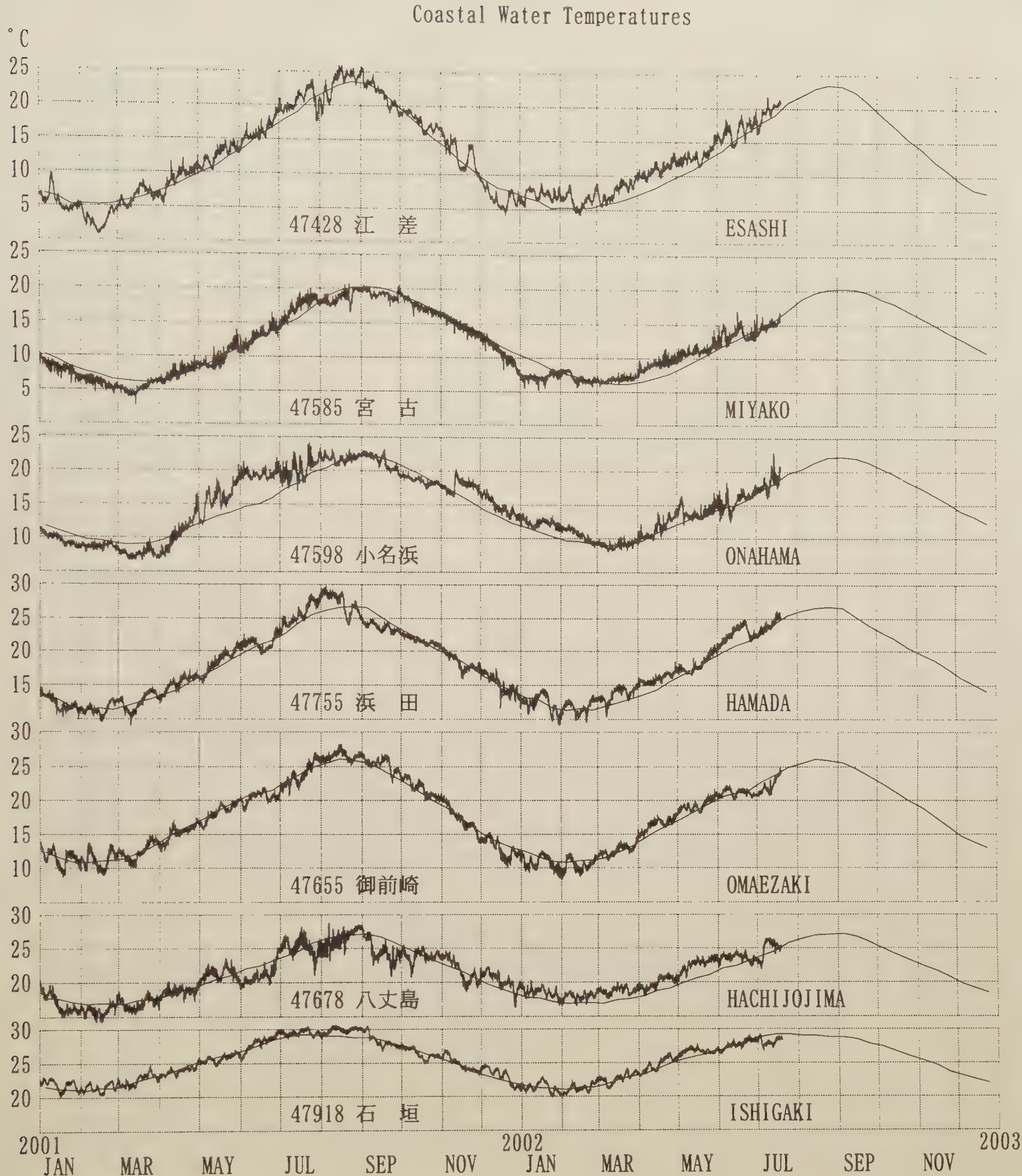
Time Series of Area Mean SST in the Western North Pacific

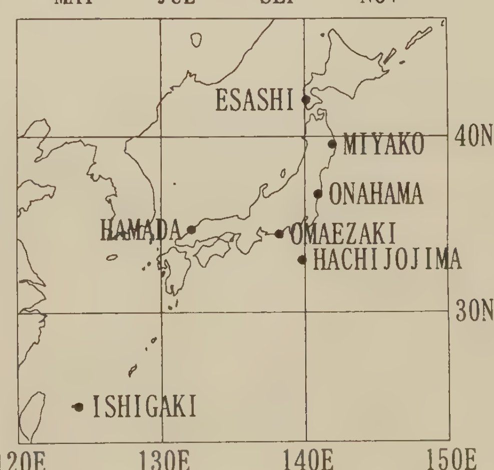


第13図　海域別旬平均海面水温平年偏差時系列図（つづき）

Fig. 13 (continue) Time series of the ten-day mean SST anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1971-2000).

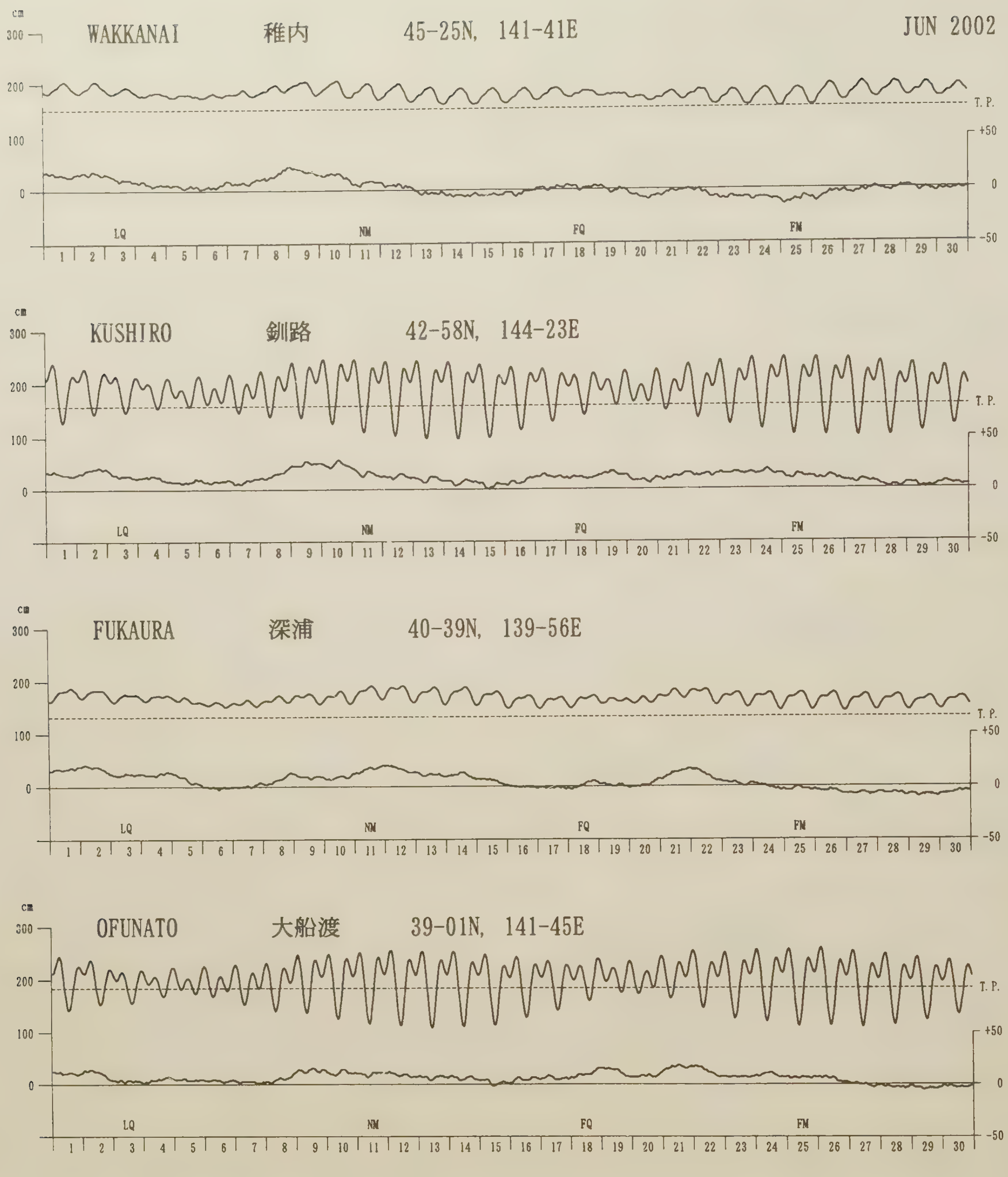






第14図 沿岸水温時系列図

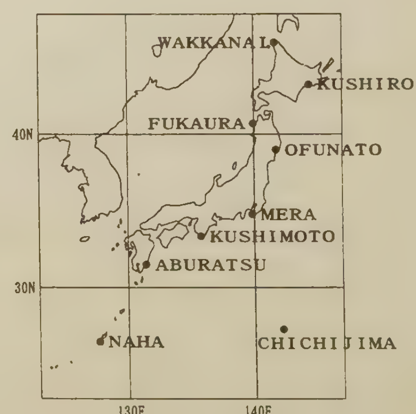
Fig. 14 Time series of hourly coastal water temperatures (°C) measured at 7 coastal stations of the JMA, shown in the right panel.
Thin lines show ten-day mean climatology.

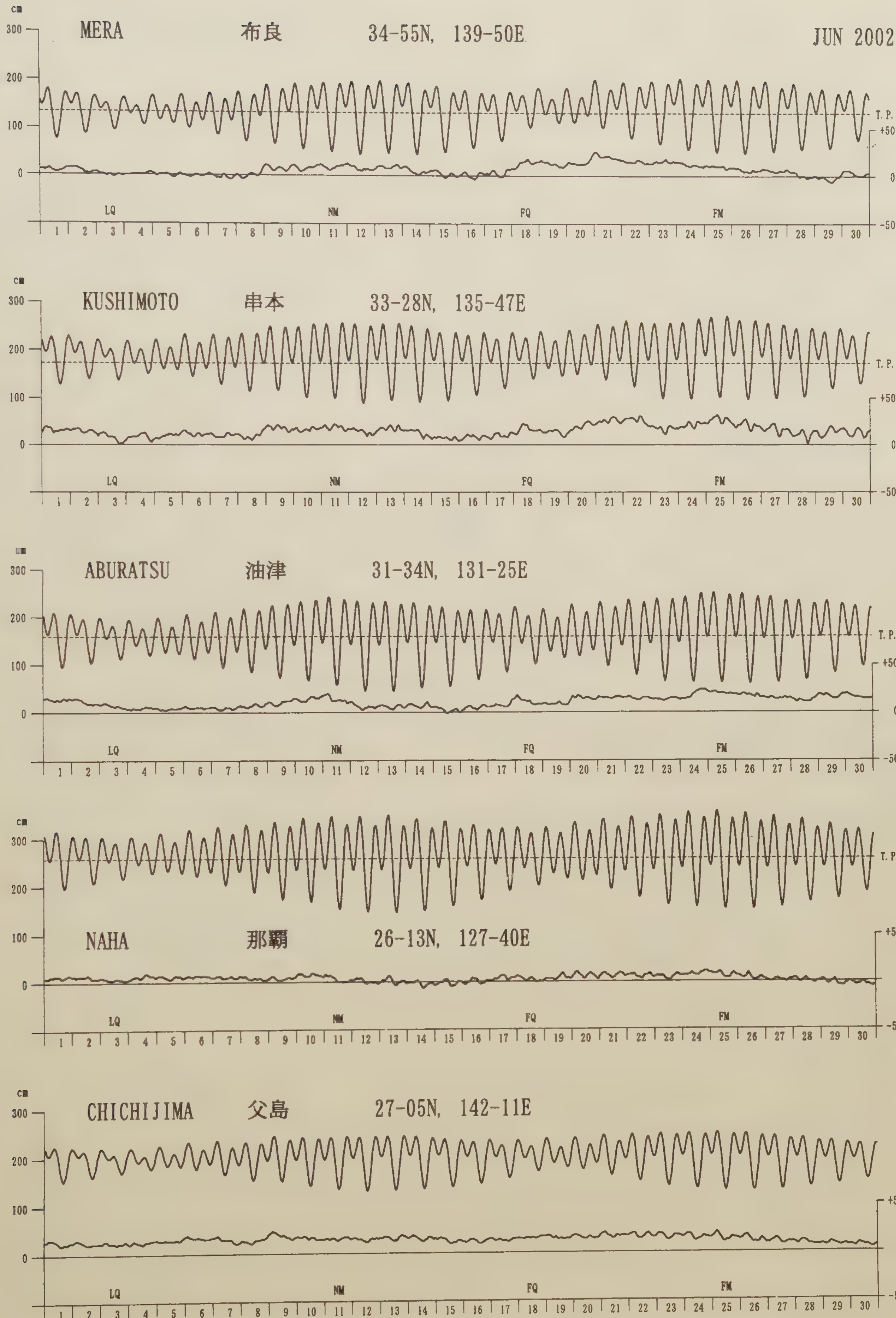


第15図 沿岸潮位時系列図（2002年 6月）

Fig. 15 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.

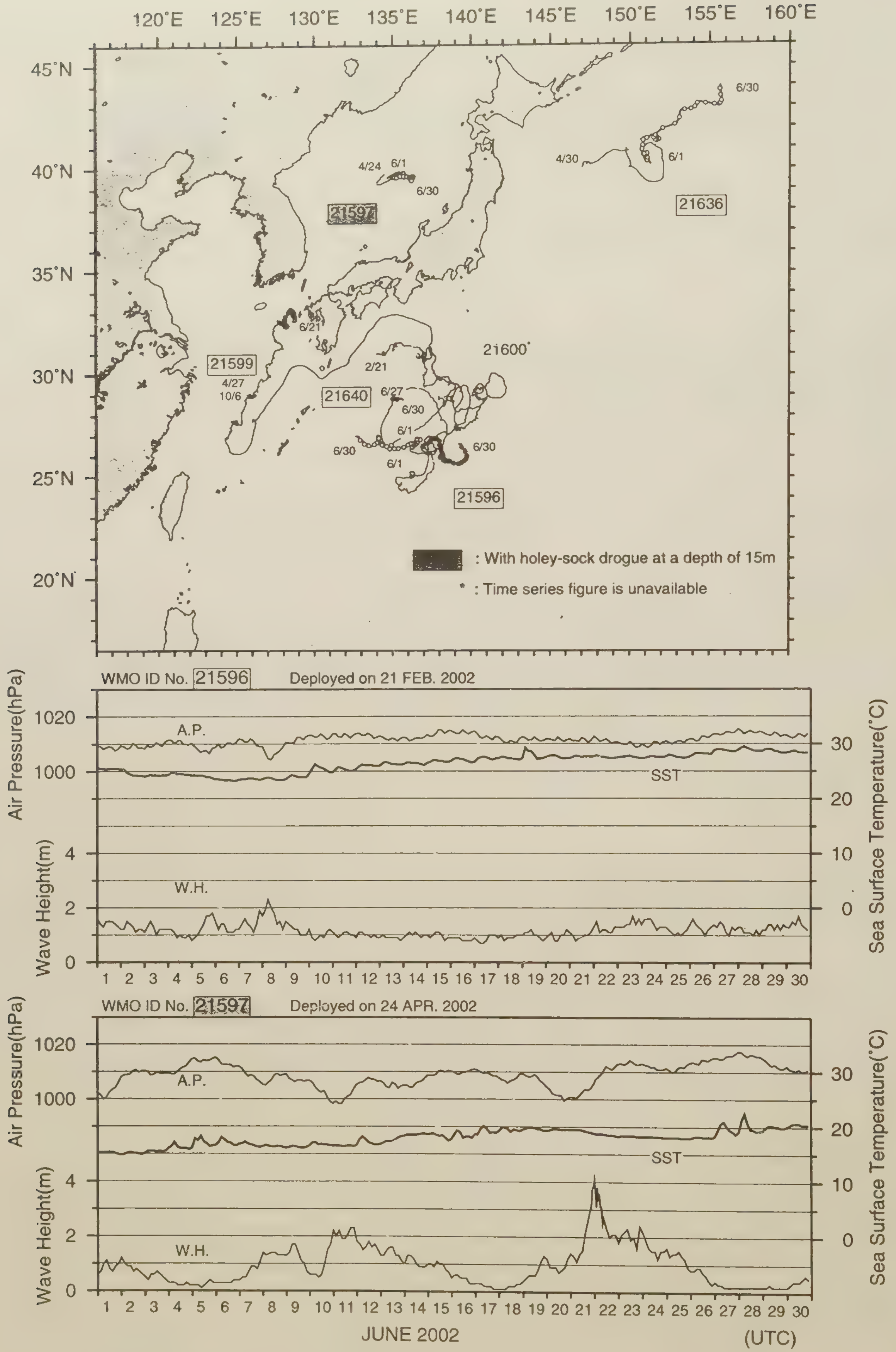
NM: new moon, FQ: first quarter
FM: full moon, LQ: last quarter
T. P. : Mean sea level of Tokyo Bay (Tokyo Peil)





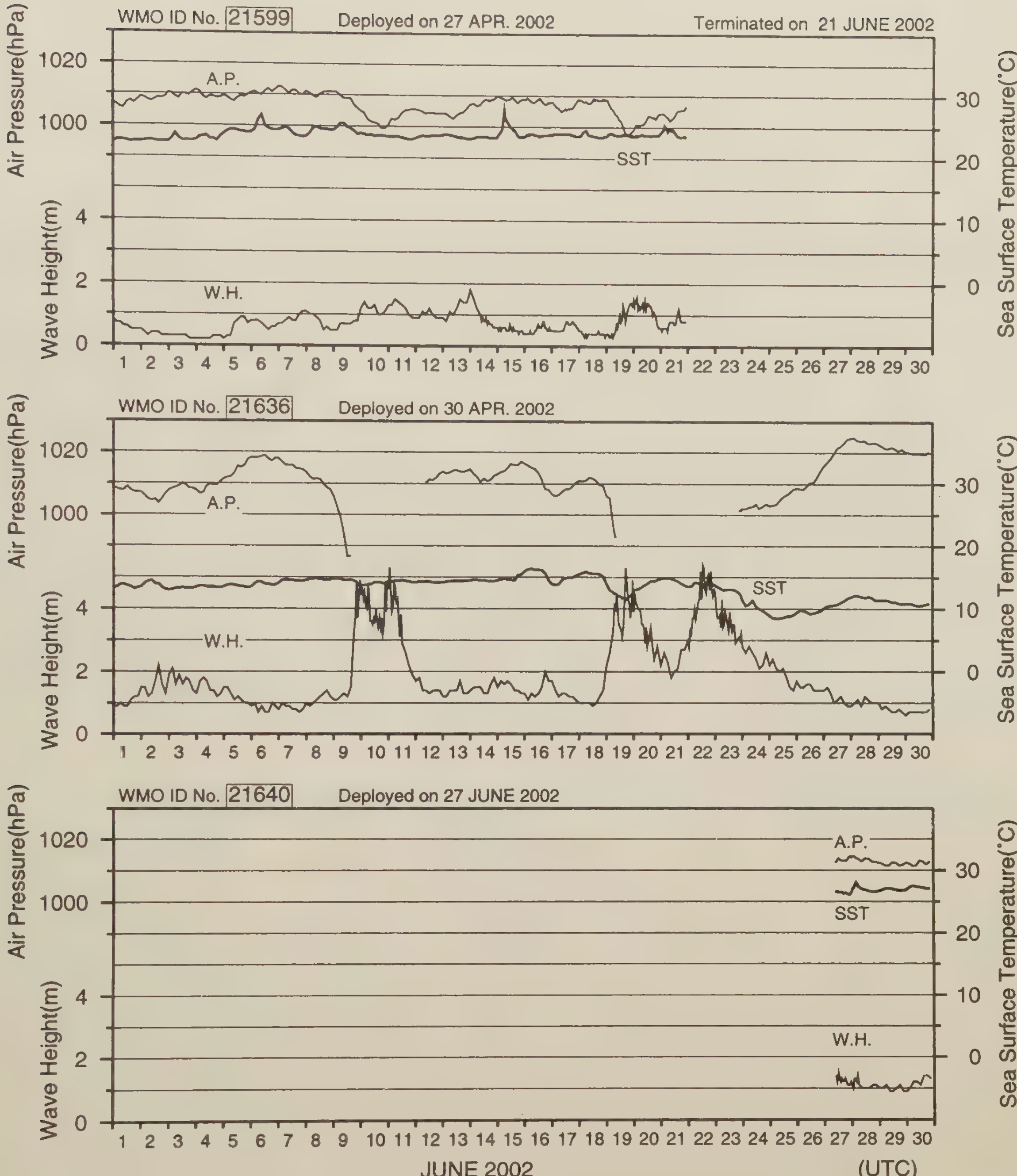
第15図 つづき

Fig. 15 continue

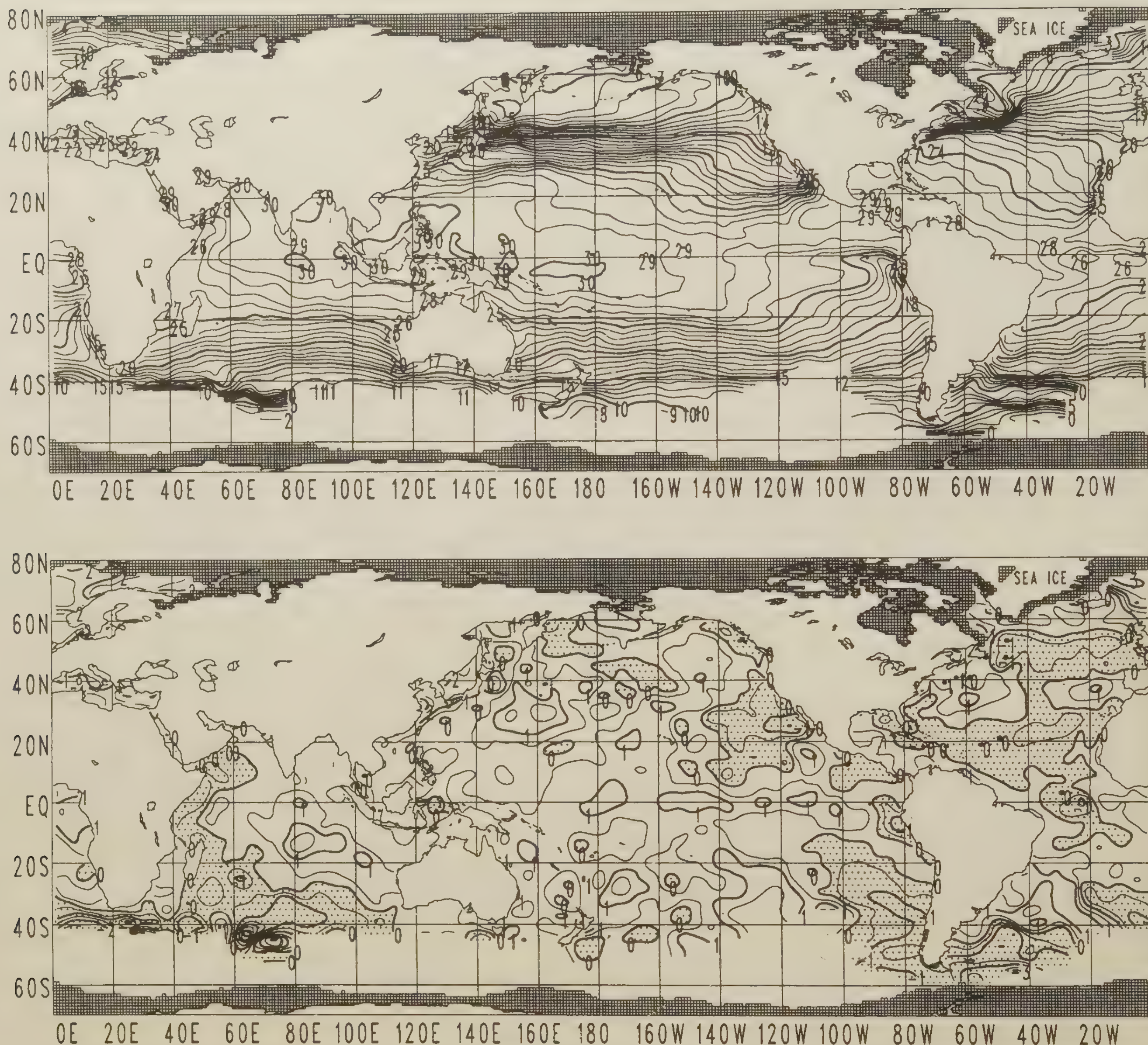


第16図　漂流型海洋気象ブイロボットの軌跡と観測要素の時系列図

Fig.16　Time series of JMA drifting buoy observation.
The upper panel shows paths of the buoys. Circles denote the position at 00h UTC everyday.
The lower panel shows time series of observation data.

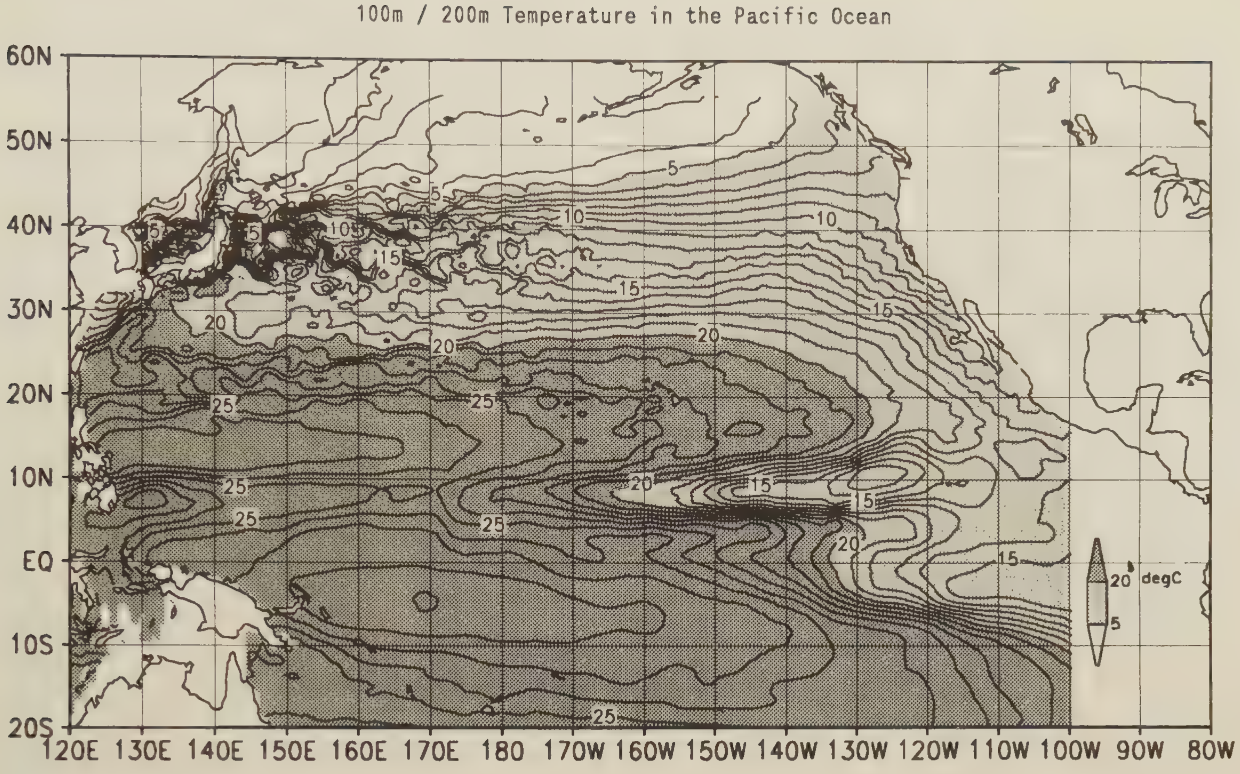


第16図 つづき
Fig.16 continue



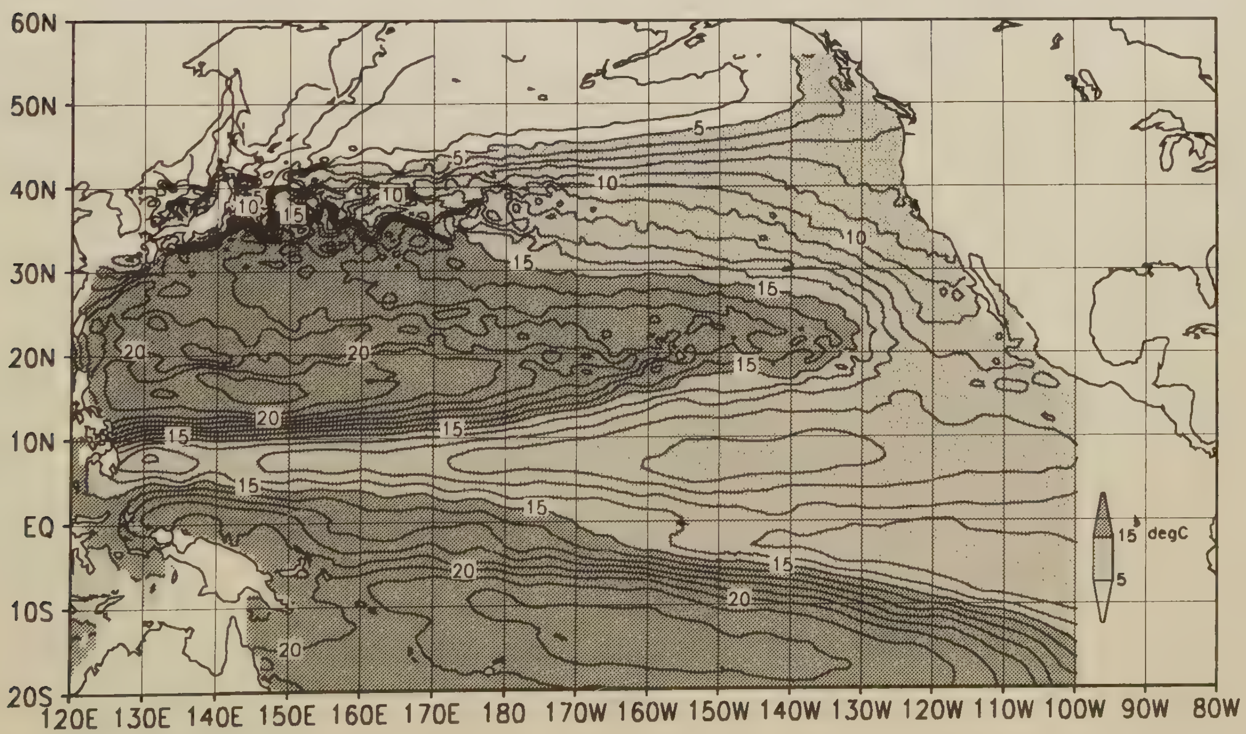
第17図　全球月平均海面水温図（上）及び偏差図（下）（2002年 6月）

Fig. 17 Monthly mean SST over the global ocean (top) and anomalies (bottom) for JUN 2002. Anomalies are computed from the JMA climatology (1971-2000). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown by thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).



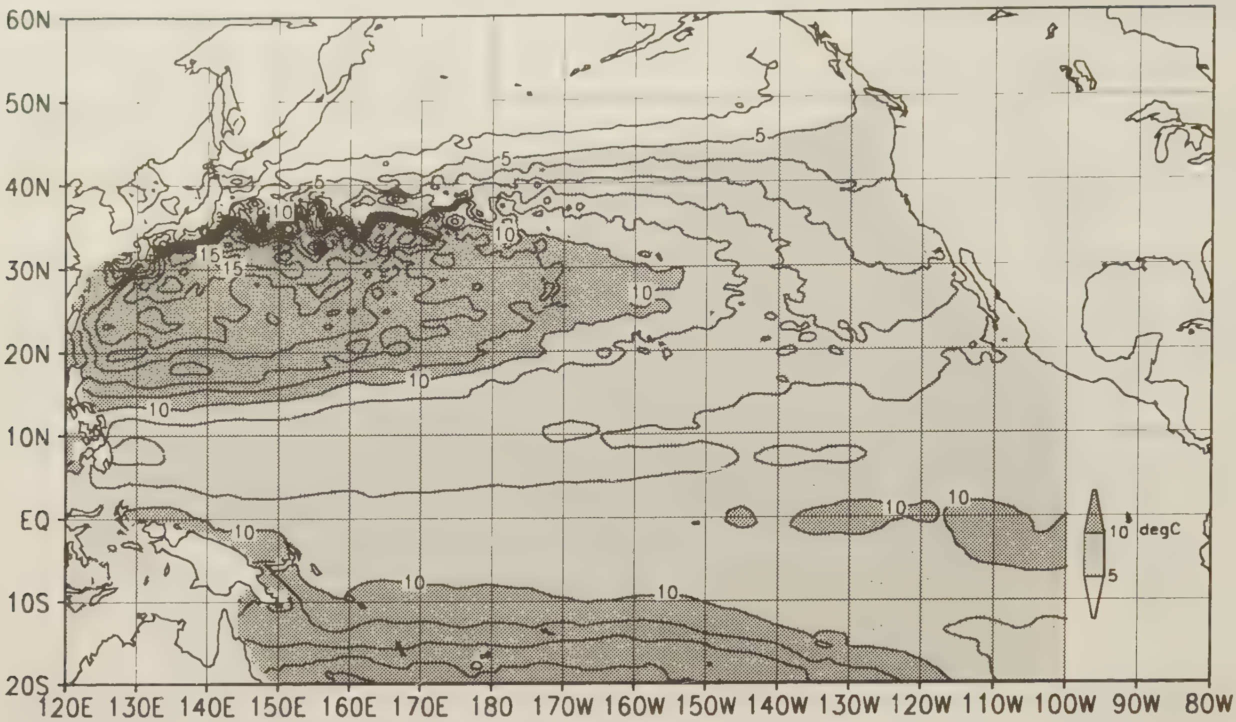
第 18 図　太平洋月平均表層水温図（深さ 100 m）　(2002 年 6 月)
（海洋総合解析システムによる）

Fig. 18　Monthly mean subsurface (100 m) temperature in the Pacific Ocean for June 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



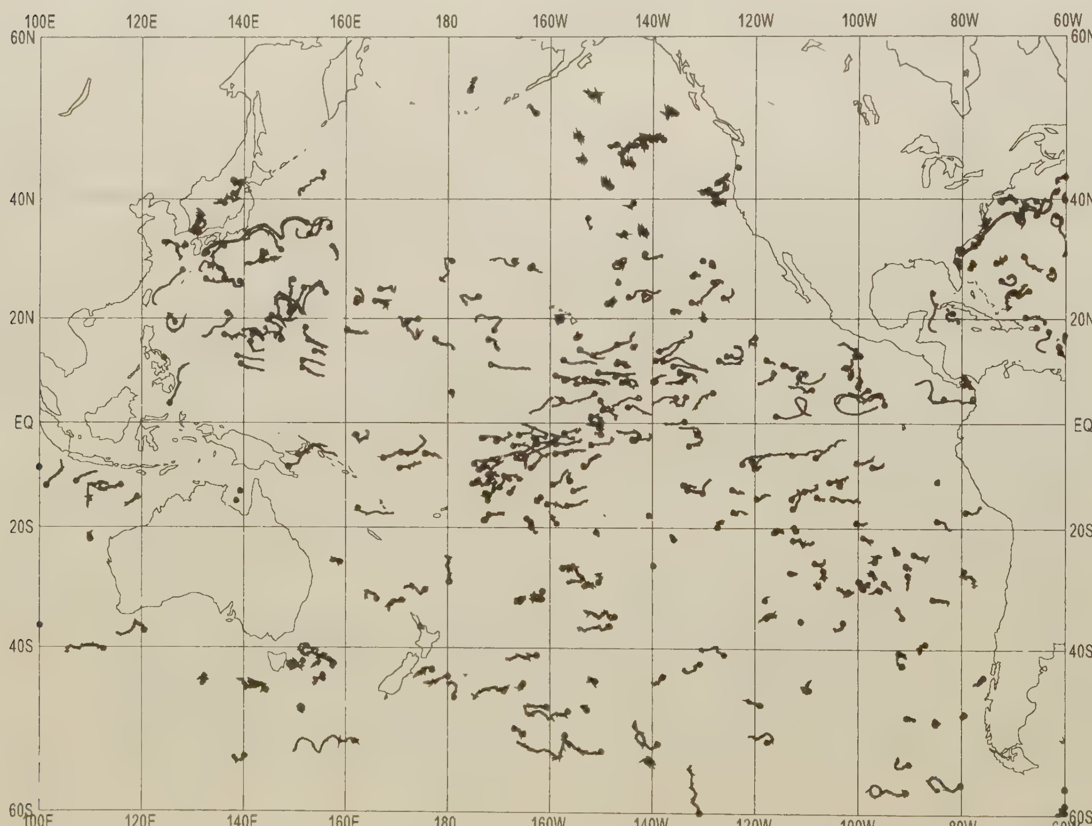
第 19 図　太平洋月平均表層水温図（深さ 200 m）　(2002 年 6 月)
（海洋総合解析システムによる）

Fig. 19　Monthly mean subsurface (200 m) temperature in the Pacific Ocean for June 2002. Contour interval is 1 ℃. (calculated by the Ocean Comprehensive Analysis System)



第 20 図　太平洋月平均表層水温図（深さ 400 m）　(2002 年 6 月)
（海洋総合解析システムによる）

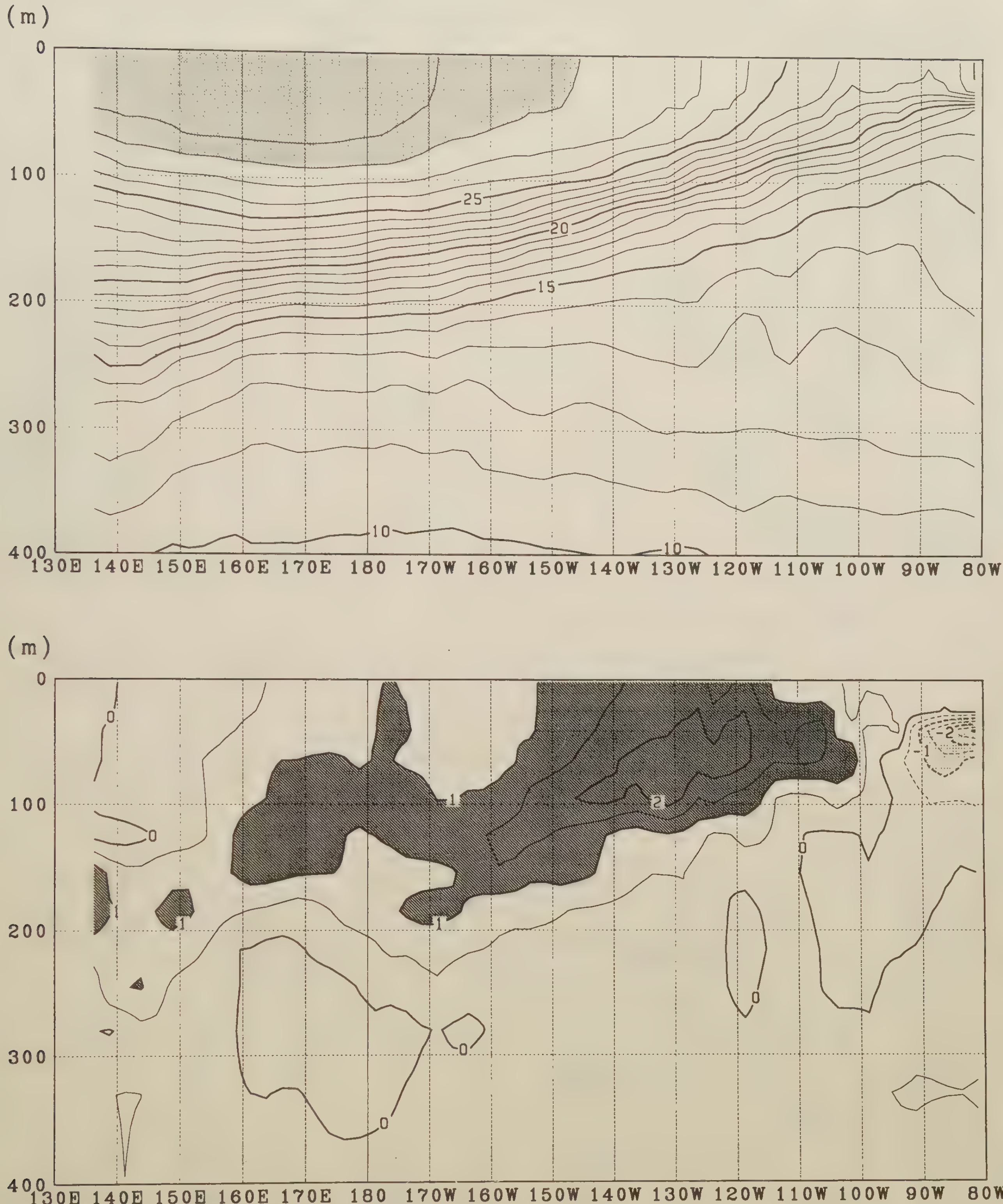
Fig. 20　Monthly mean subsurface (400 m) temperature in the Pacific Ocean for June 2002. Contour interval is 1 ˚C. (calculated by the Ocean Comprehensive Analysis System)



第 21 図　太平洋ブイ流跡図（2002 年 6 月）

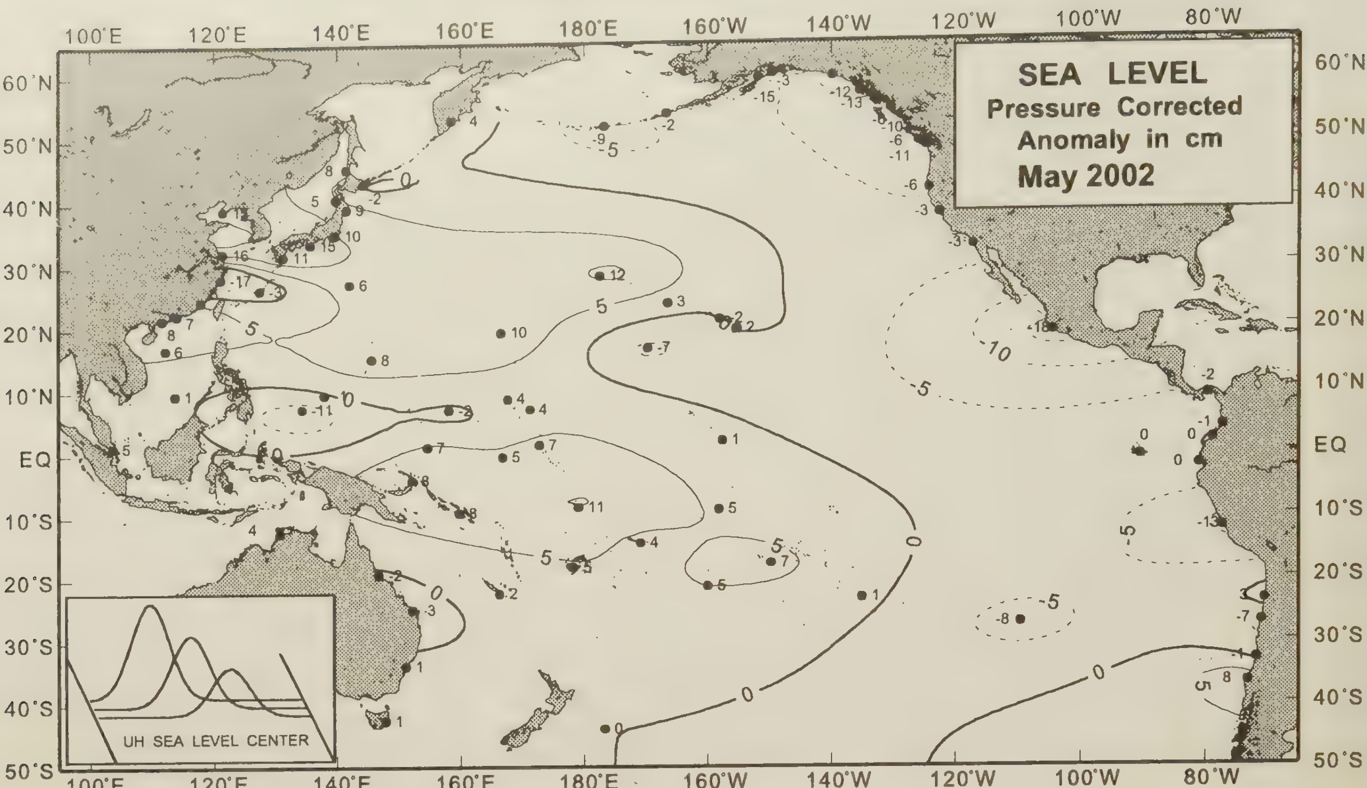
Fig. 21　Trajectories of drifting buoys in the Pacific Ocean during June 2002. Each track is for one buoy. Small circles represent the last positions for the month.

Depth-Longitude Sections of Equatorial Temperature & Anomalies



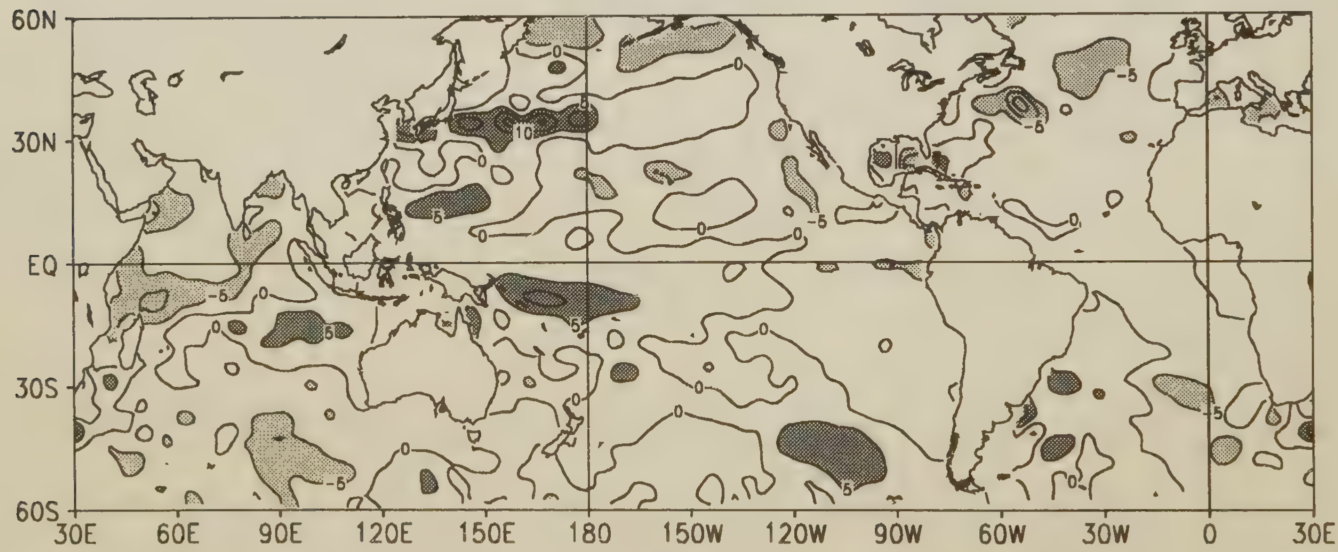
第22図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（2002年 6月）

Fig. 22 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for JUN 2002. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-2001 base period means.



第 23 図　太平洋月平均海面水位偏差図 （2002 年 5 月）

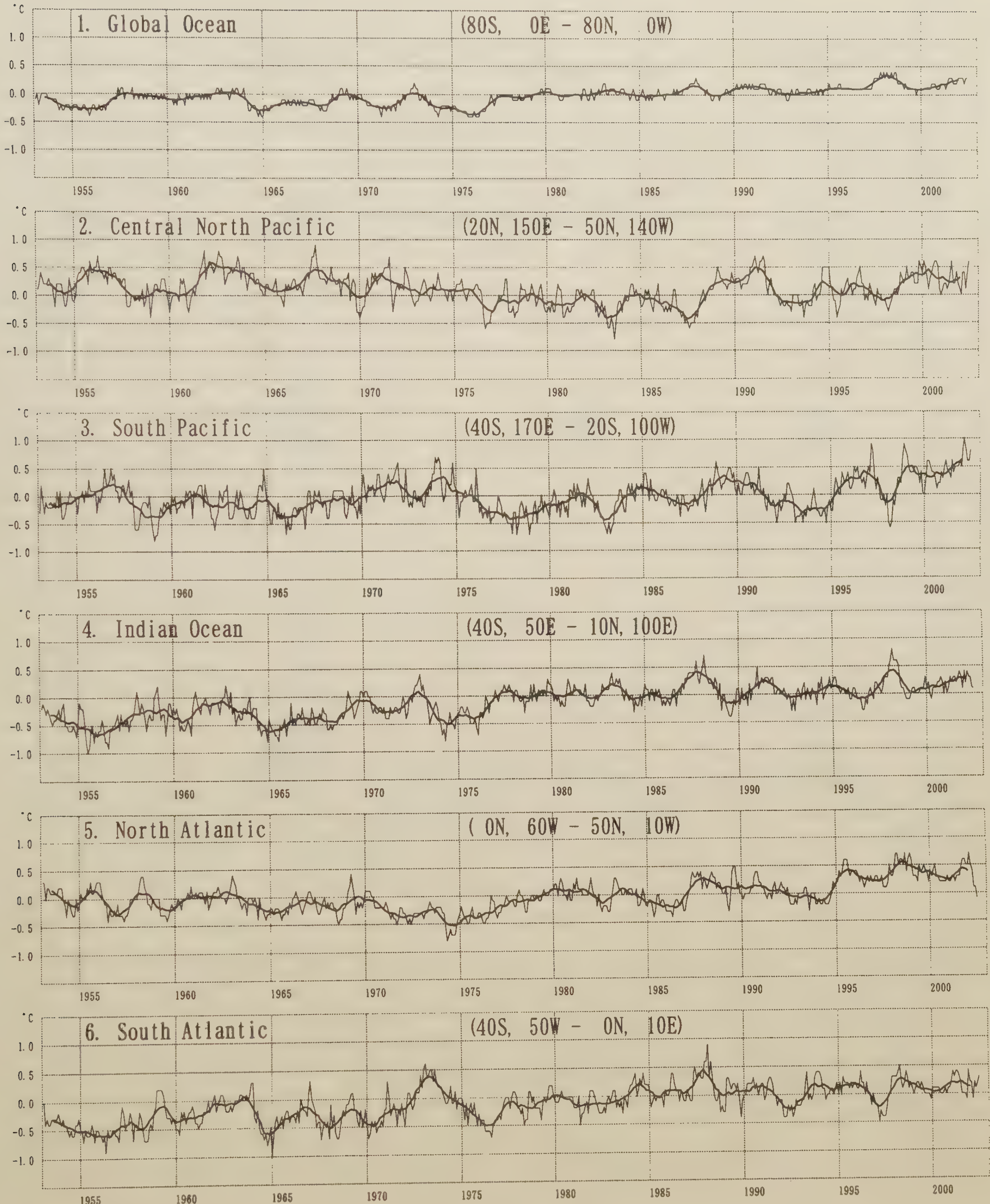
Fig. 23　Monthly sea level anomalies for May 2002 obtained from mean sea level (1975-1995) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Department of Oceanography, University of Hawaii.



第 24 図　全球月平均海面高度偏差図 （2002 年 5 月）

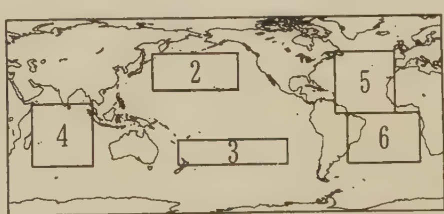
Fig. 24　Monthly sea surface height anomalies in the global ocean derived from the altimeter data of TOPEX/POSEIDON for May 2002. Contour interval is 5 cm. Positive anomalies exceeding +5 cm are shaded and negative anomalies exceeding -5 cm are spotted. Anomalies are computed from 1993-1998 base period means.

Long-term Variation of Monthly Mean SST Anomalies

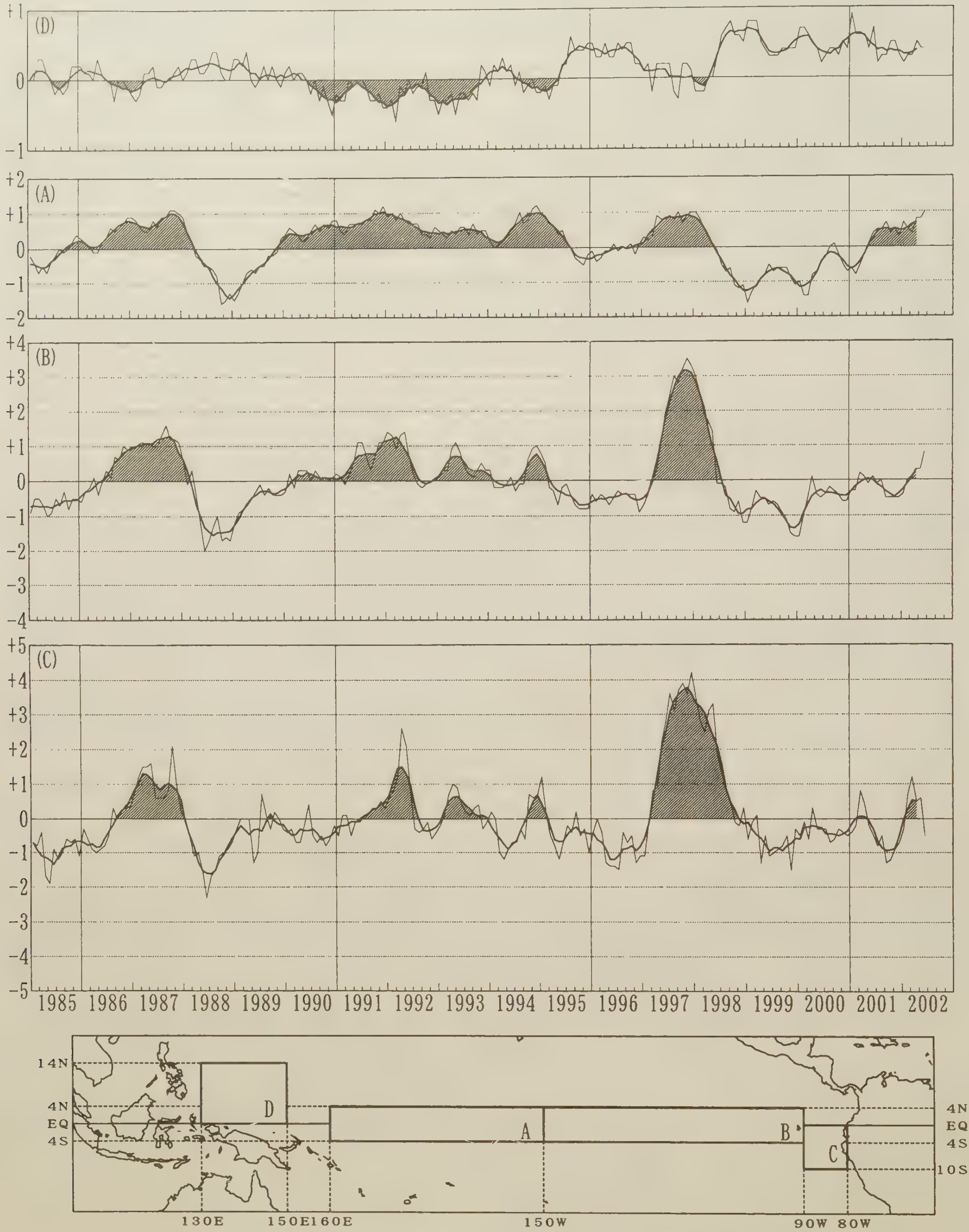


第25図 海域平均海面水温偏差の長期変動

Fig. 25 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1971-2000). Thin lines show the monthly mean and thick lines their 13-month running means.



Time Series of Tropical Pacific SST Anomalies



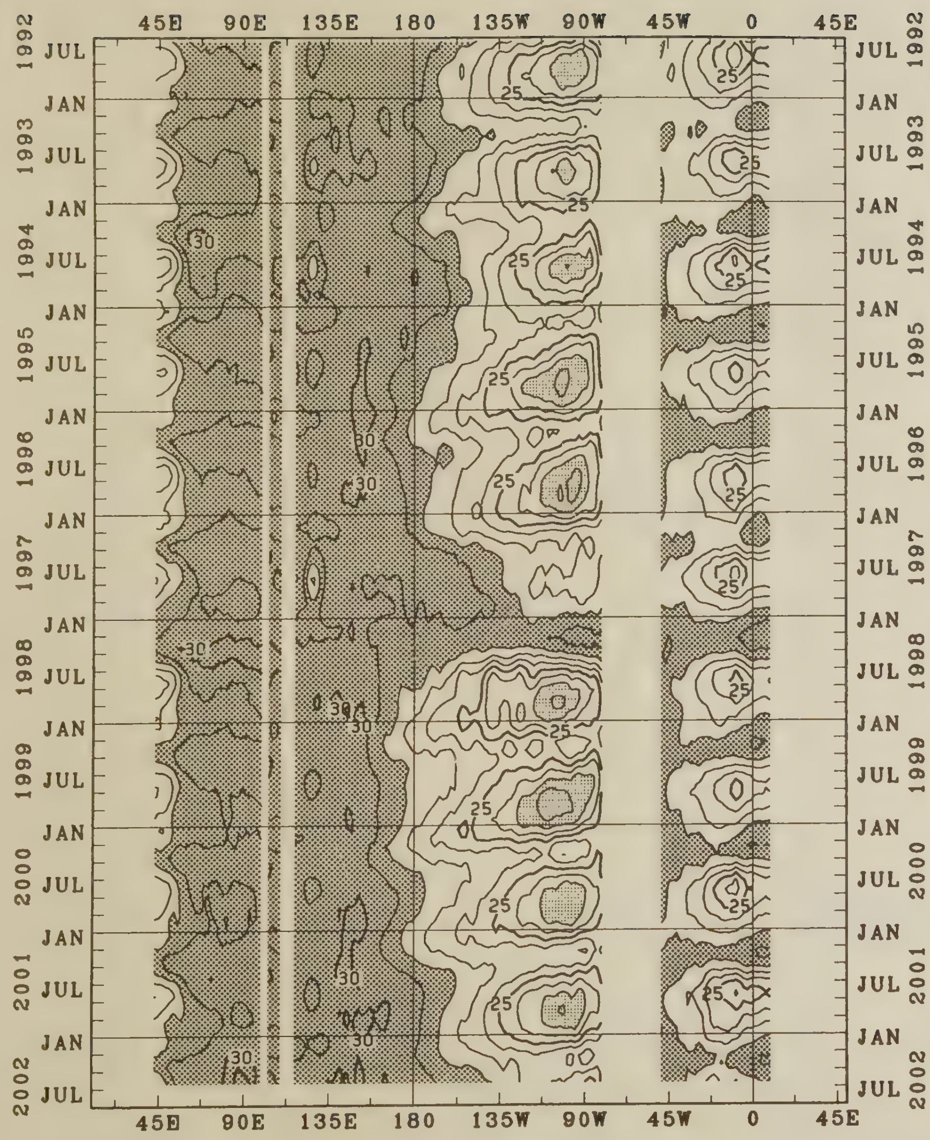
第26図　太平洋熱帯域の海面水温偏差時系列図

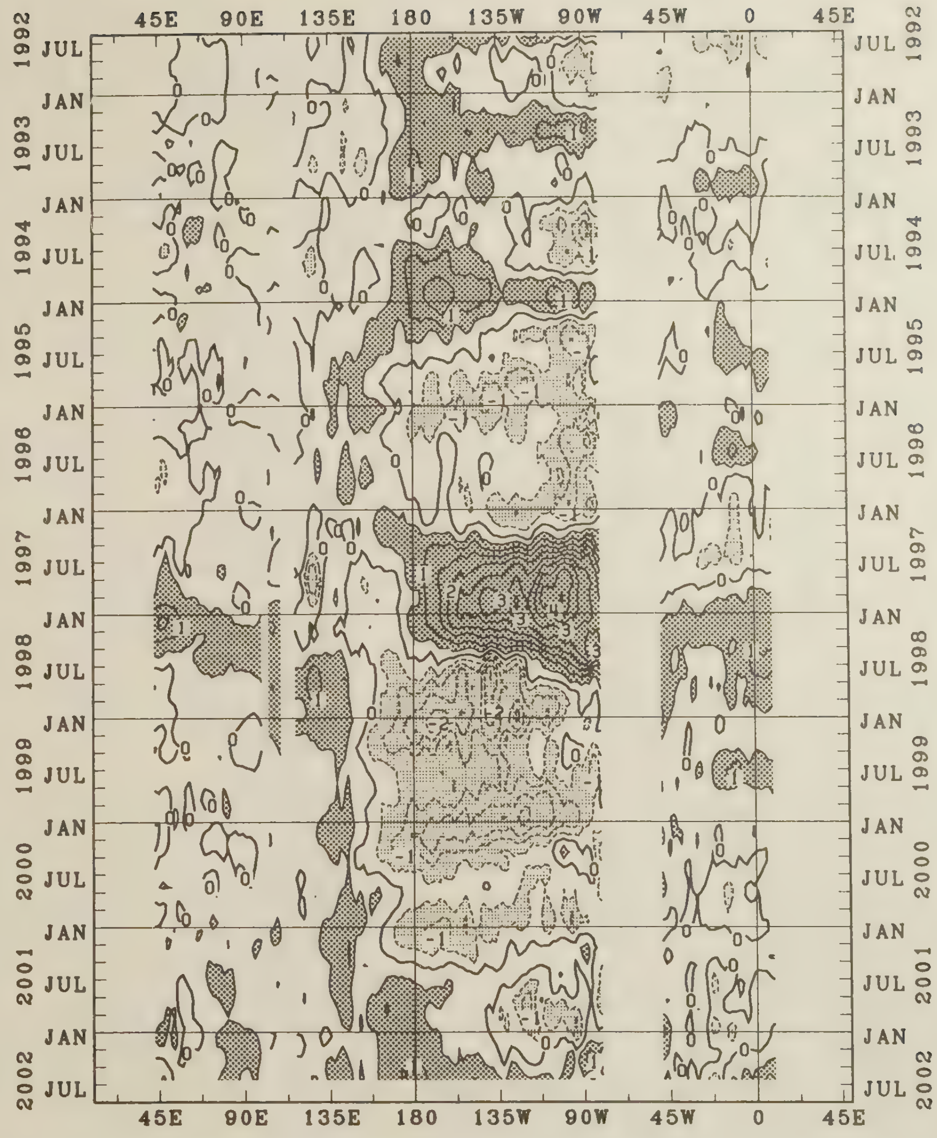
Fig. 26 Time series of monthly mean SST anomalies (°C) in the tropical Pacific Ocean for the areas indicated at the bottom panel. Thin lines show the monthly means and thick lines their 5-month running means. Positive anomalies (A, B, C) and negative anomalies (D) are shaded. Anomalies are computed from the JMA climatology (1971-2000).

MONTH YEAR	SEA SURFACE TEMPERATURE AND ANOMALY (°C) REGION D 14N-EQ 130E-150E		REGION A 4N-4S 160E-150W		REGION B 4N-4S 150W-90W		REGION C EQ-10S 90W-80W		SOI	SEA LEVEL PRESSURE ANOMALY (hPa) TAHITI 17-33S 149-37W	DARWIN 12-24S 130-52E
JAN 00	29.2	0.7	27.0	-1.0	23.8	-1.6	24.0	-0.5	0.5	1.2	0.1
FEB 00	29.0	0.7	26.6	-1.4	25.3	-1.0	25.9	-0.1	1.1	2.6	-0.3
MAR 00	29.1	0.6	26.7	-1.4	26.6	-0.5	25.7	-0.6	1.1	1.6	-0.6
APR 00	29.3	0.5	27.4	-0.8	27.3	0.1	25.7	0.3	1.3	1.0	-1.1
MAY 00	29.7	0.4	27.9	-0.7	26.5	-0.4	24.0	-0.3	0.3	0.8	0.4
JUN 00	29.6	0.2	28.1	-0.4	25.7	-0.5	22.6	-0.3	-0.3	0.3	0.8
JUL 00	29.6	0.3	28.2	-0.3	25.0	-0.4	21.6	-0.3	-0.3	-0.5	0.0
AUG 00	29.6	0.4	28.4	0.0	24.5	-0.2	20.2	-0.7	0.6	0.2	-0.9
SEP 00	29.7	0.4	28.5	0.1	24.4	-0.3	19.9	-0.6	0.9	1.5	-0.2
OCT 00	29.7	0.3	28.2	-0.2	24.3	-0.4	20.6	-0.3	1.0	0.3	-1.5
NOV 00	29.8	0.5	27.9	-0.5	24.1	-0.6	21.4	-0.4	1.8	1.2	-2.3
DEC 00	29.4	0.4	27.5	-0.7	24.4	-0.6	22.4	-0.5	0.9	-0.9	-2.6
JAN 01	29.4	0.9	27.4	-0.6	25.1	-0.3	24.1	-0.4	0.8	2.5	0.6
FEB 01	28.9	0.6	27.2	-0.8	26.0	-0.3	25.8	-0.2	1.0	-0.4	-3.2
MAR 01	29.1	0.6	27.6	-0.5	27.3	0.2	27.1	0.8	0.8	1.3	-0.2
APR 01	29.4	0.6	28.0	-0.2	27.3	0.1	25.8	0.4	0.1	-0.1	-0.3
MAY 01	29.7	0.4	28.7	0.1	26.8	-0.1	24.1	-0.2	-0.7	-0.2	0.9
JUN 01	30.1	0.7	28.9	0.4	26.3	0.1	22.4	-0.5	0.2	-0.2	-0.5
JUL 01	29.5	0.2	29.0	0.5	25.3	-0.1	21.1	-0.8	-0.2	-0.1	0.3
AUG 01	29.5	0.3	28.9	0.5	24.7	0.0	20.4	-0.5	-0.7	-0.9	0.1
SEP 01	29.6	0.3	29.1	0.7	24.2	-0.5	19.2	-1.3	0.1	-0.2	-0.4
OCT 01	29.9	0.5	28.8	0.4	24.2	-0.5	19.7	-1.2	-0.1	-0.9	-0.9
NOV 01	29.8	0.5	28.9	0.5	24.2	-0.5	20.9	-0.9	0.6	0.7	-0.4
DEC 01	29.3	0.3	28.5	0.3	24.5	-0.5	22.2	-0.7	-0.8	-1.2	0.3
JAN 02	28.7	0.2	28.7	0.7	25.0	-0.4	24.2	-0.3	0.3	1.3	0.7
FEB 02	28.6	0.3	28.5	0.5	26.3	0.0	26.7	0.7	0.7	1.5	-0.2
MAR 02	28.8	0.3	28.5	0.4	27.2	0.1	27.5	1.2	-0.2	0.4	1.0
APR 02	29.3	0.5	29.0	0.8	27.5	0.3	25.9	0.5	-0.1	0.1	0.3
MAY 02	29.7	0.4	29.4	0.8	27.2	0.3	24.9	0.6	-1.3	-1.1	0.7
JUN 02	29.8	0.4	29.5	1.0	27.0	0.8	22.4	-0.5	-0.4	-0.2	0.4

第1表　太平洋熱帯域の大気及び海洋の監視指数

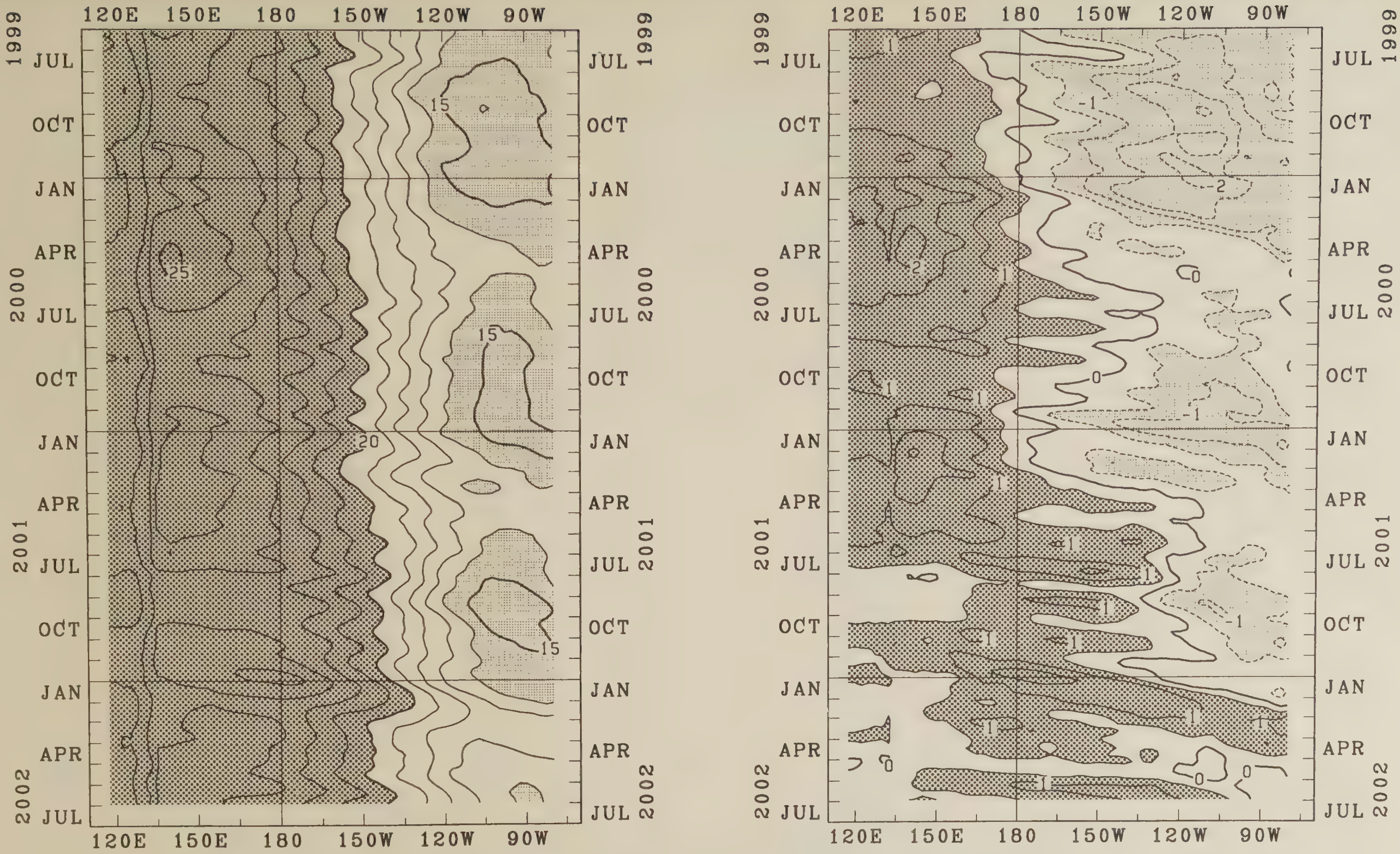
Table 1 Atmospheric and oceanic monitoring indices in the tropical Pacific Ocean





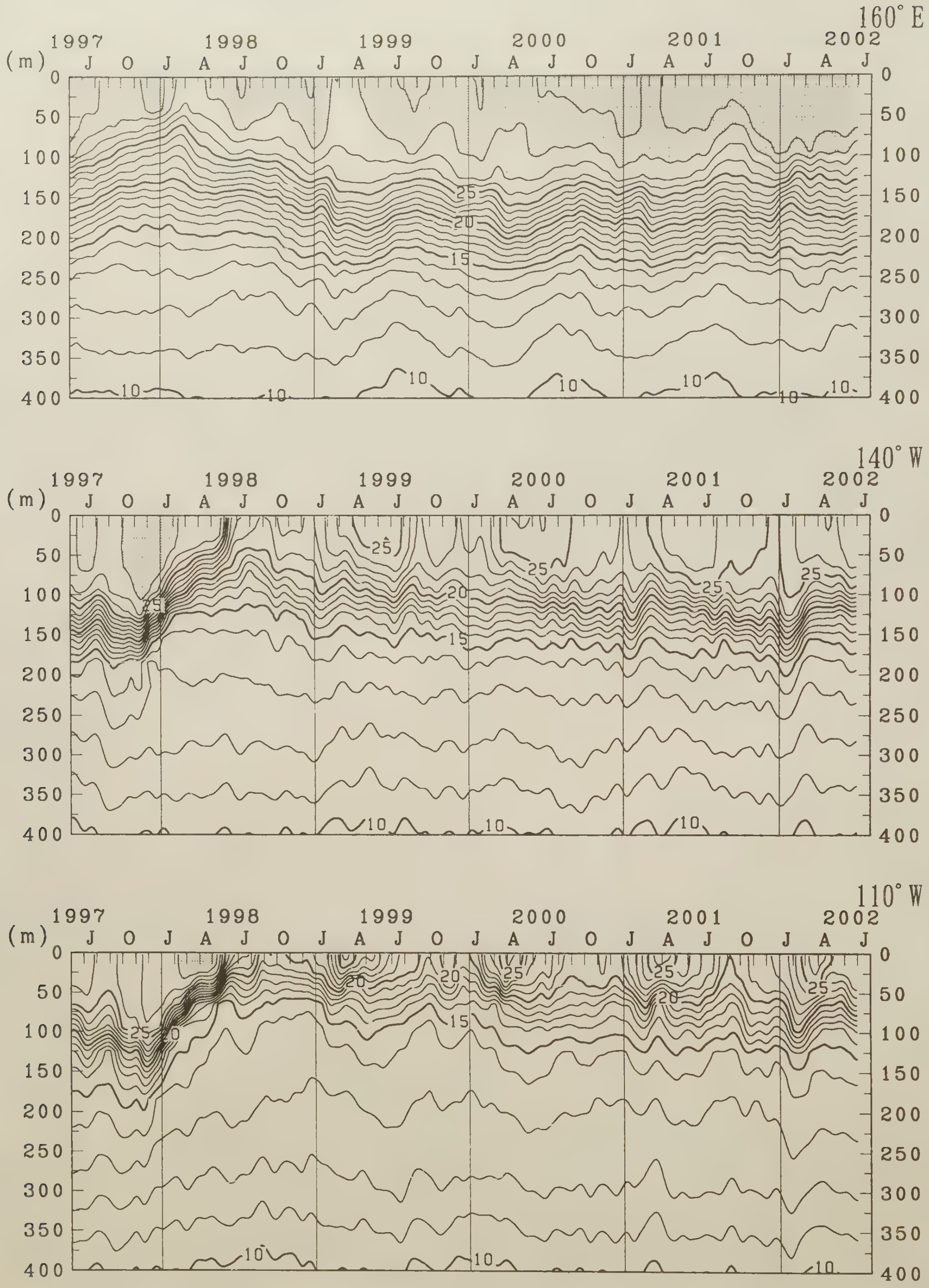
第 27 図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

Fig. 27　Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2 °N-2 °S) in the global ocean. Contour interval is 1 °C (left) and 0.5 °C (right). Values greater than 28 °C are shaded and values less than 23 °C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1971-2000 base period means.



第28図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

Fig. 28 Time-longitude sections of ocean heat content in the upper 260 m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C are shaded and values less than 16°C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-2001 base period means.



第29図　太平洋赤道域の表層水温の時間－深度断面図
（上：西部、中：中部、下：東部）

Fig. 29 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.

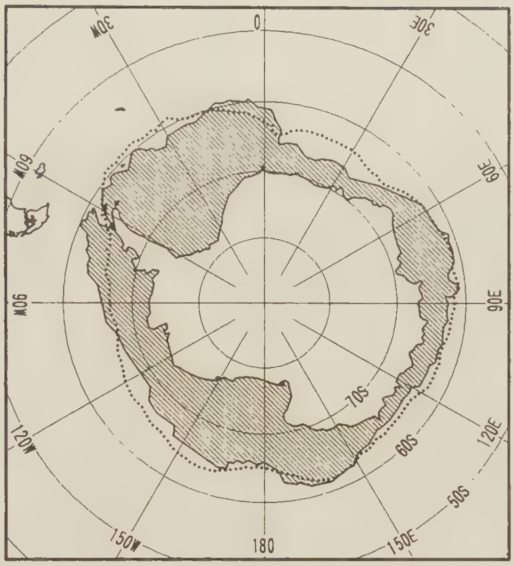


第30-1図　北極域の海氷図（2002年 6月14日）

Fig.30-1 Sea ice chart in the Arctic on 14 Jun. 2002.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.

The data source is the National Ice Center (USA).

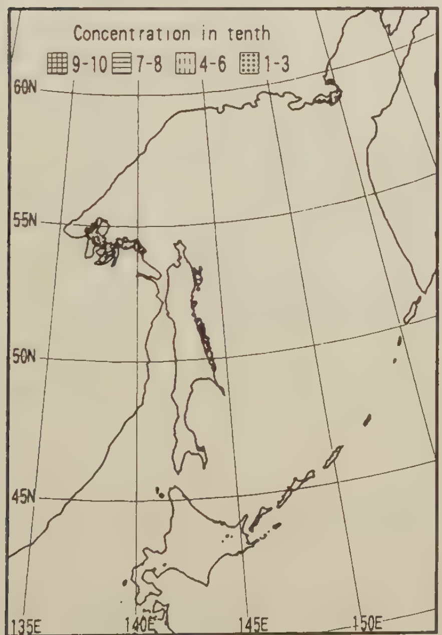


第30-2図　南極域の海氷図（2002年 6月14日）

Fig.30-2 Sea ice chart in the Antarctic on 14 Jun. 2002.

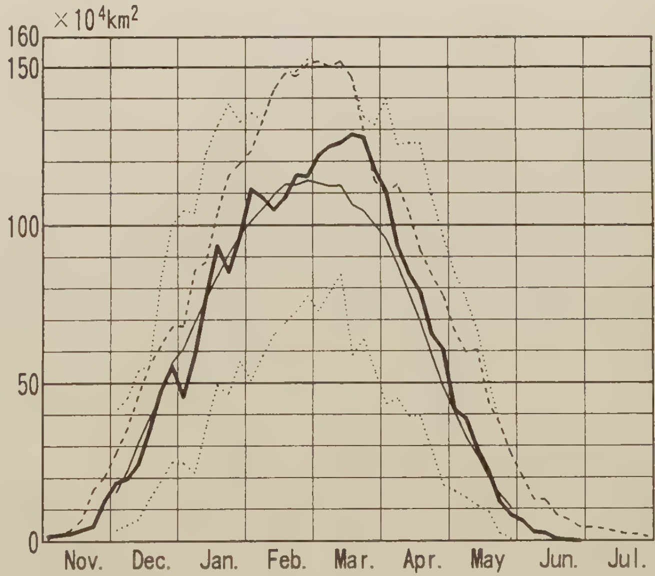
The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1973 through 1990.

The data source is the National Ice Center (USA).



第30-3図　オホーツク海の海氷図（2002年 6月15日）

Fig.30-3 Sea ice chart in the Sea of Okhotsk on 15 Jun. 2002.



第30-4図 オホーツク海の海氷域面積

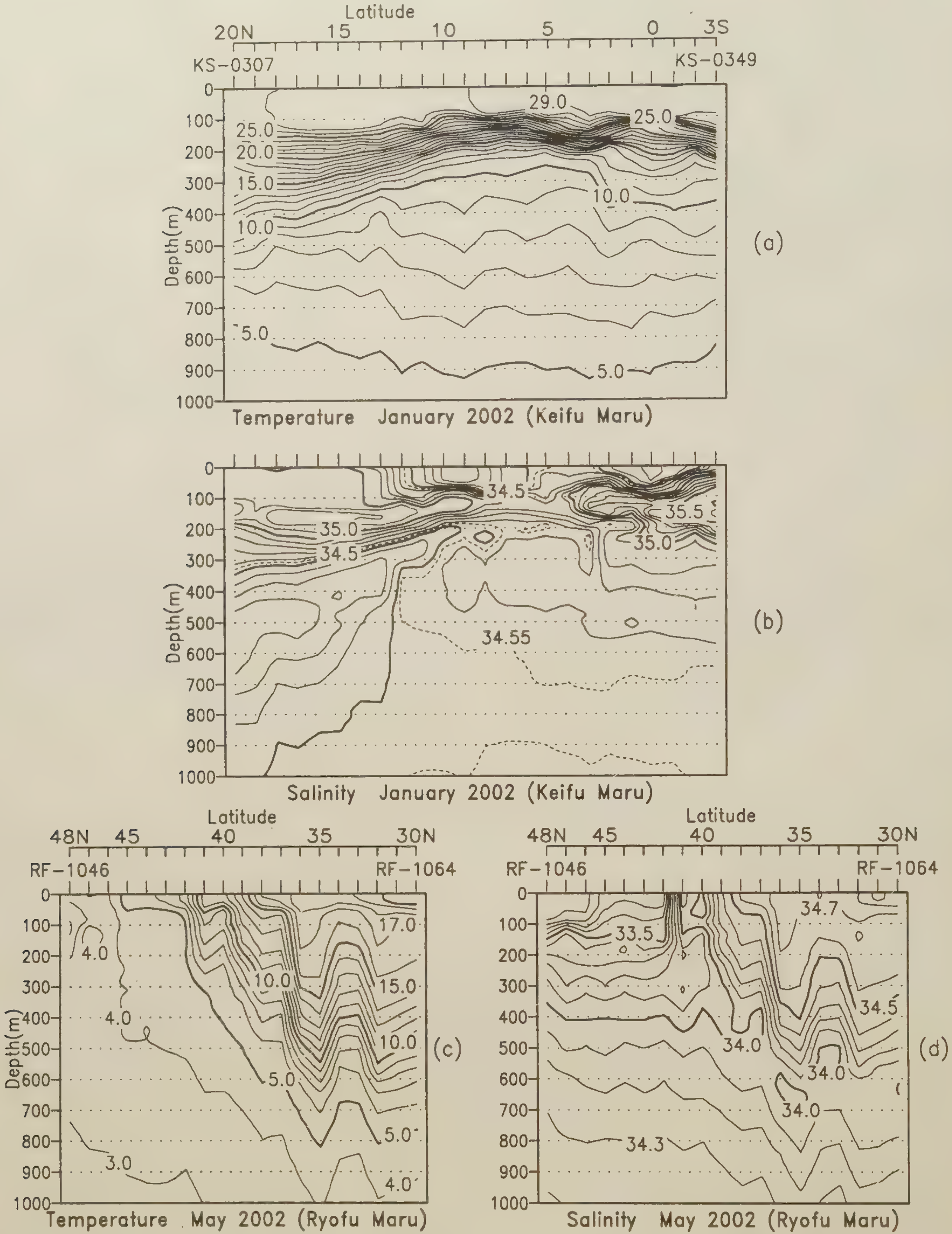
Fig.30-4 Time-series of 5-day sea ice area in the Sea of Okhotsk.

———— : current season (2001/2002)

———— : mean extent (1971–2000)

.... : maximum or minimum extent (1971–2001)

- - - - - - : last season (2000/2001)



第 31 図 東経 165 度に沿った鉛直断面図. (a) 水温 (2002 年 1 月), (b) 塩分 (2002 年 1 月), (c) 水温 (2002 年 5 月), (d) 塩分 (2002 年 5 月), (e) 観測位置図.

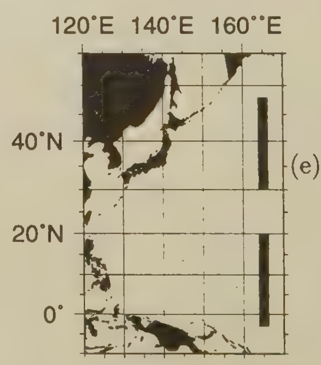
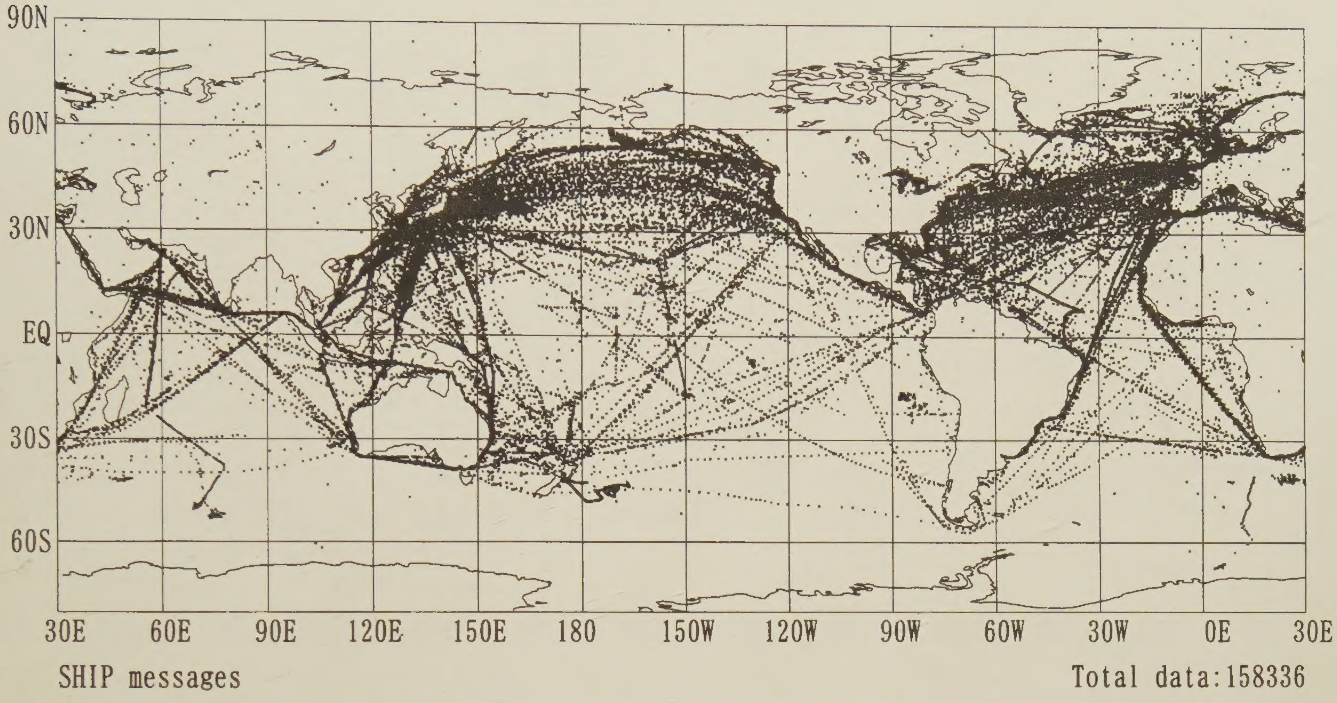
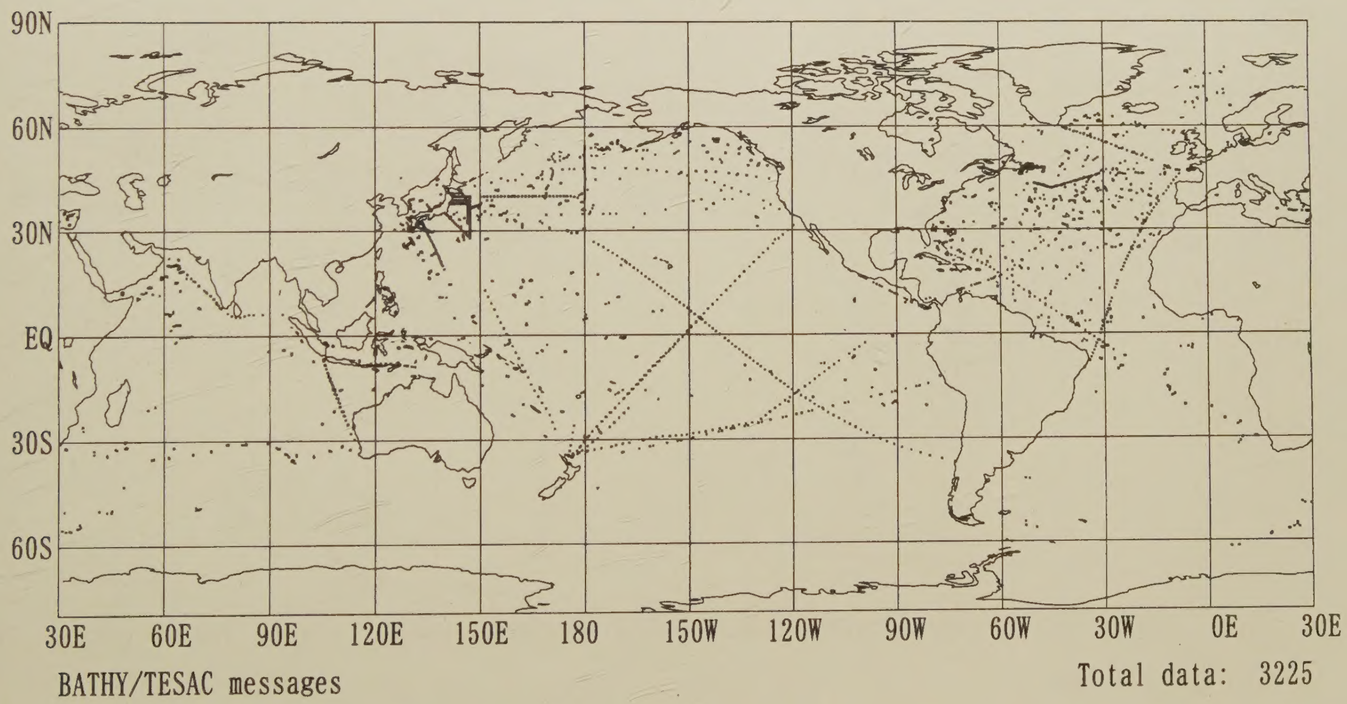


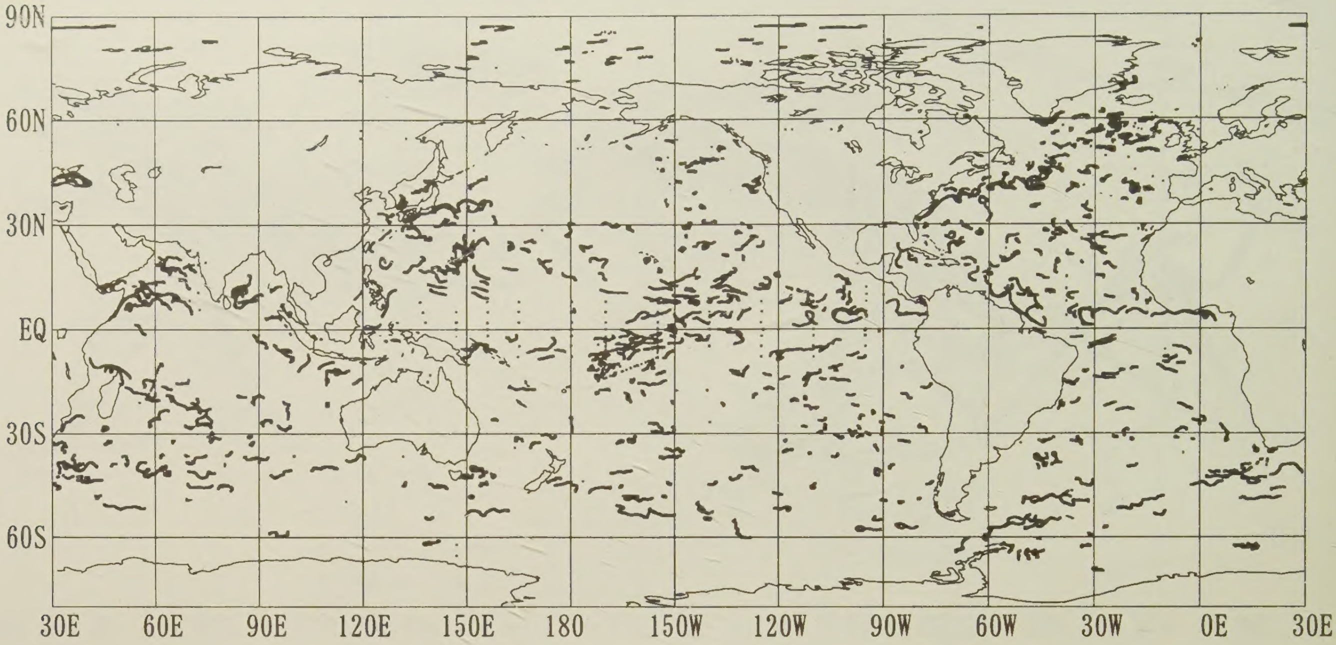
Fig. 31 Vertical sections along 165°E by R/V Keifu Maru and R/V Ryofu Maru. (a) Water temperature observed in January 2002, (b) Salinity observed in January 2002, (c) Water temperature observed in May 2002, (d) Salinity observed in May 2002, (e) Location of oceanographic observations along 165°E.



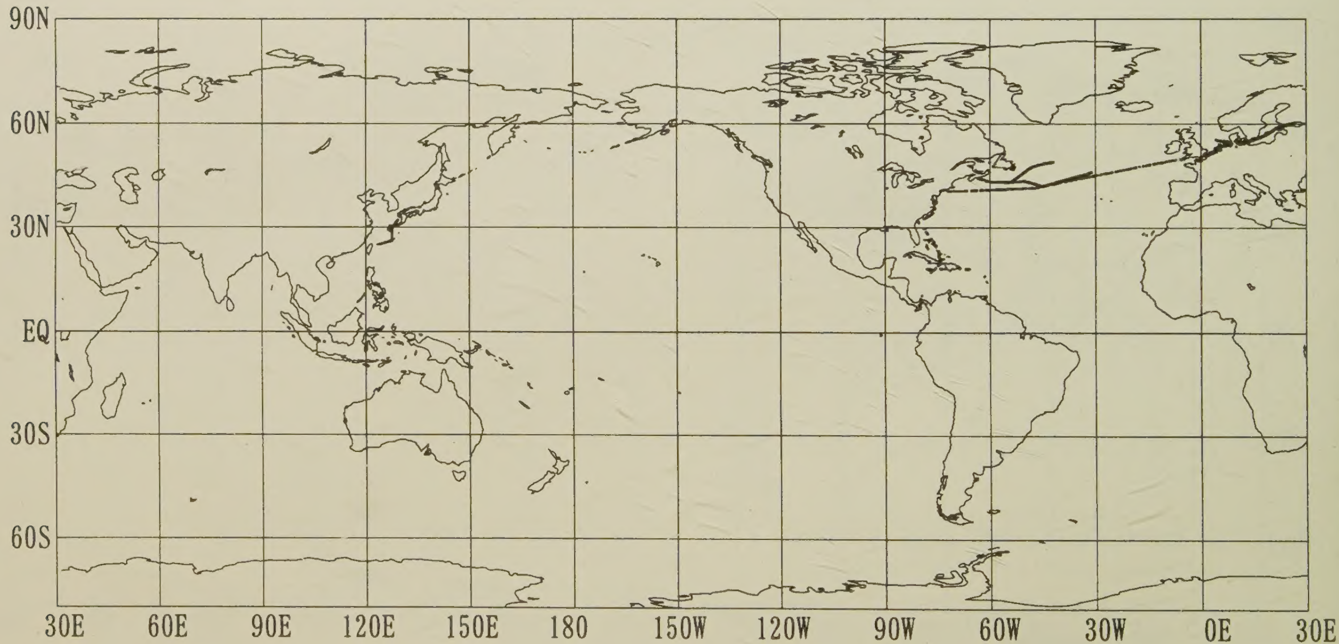


第32-1図　測点分布図(2002年 6月)

Fig. 32-1 Geographical distribution of SHIP messages (SST data, top) and BATHY/TESAC messages (subsurface temperature data, bottom) for JUN 2002.



BUOY messages Total data:487120



TRACKOB messages Total data: 979

第32-2図 測点分布図(2002年 6月)

Fig. 32-2 Geographical distribution of BUOY messages (buoy drift and SST data, top) and TRACKOB messages (ship drift and SST data, bottom) for JUN 2002.

気 象 庁 海 洋 月 報

Monthly Ocean Report

June 2002 (No. 114)

本月報掲載の 2002 年 6 月のプロダクトには、気象庁が観測したデータ及び GTS（全球気象通信網）を通じて入手した国際気象通報式による通報のほか、下記の機関等から提供いただいたデータを使用しています。御礼申し上げます。

防衛庁、水産庁、海上保安庁

水産総合研究センター

海洋科学技術センター、（社）漁業情報サービスセンター

東京大学

水産試験場等（北海道、岩手県、宮城県、山形県、福島県、茨城県、東京都、富山県、石川県、福井県、静岡県、愛知県、三重県、和歌山県、鳥取県、島根県、山口県、徳島県、高知県、佐賀県、熊本県、沖縄県）

（順不同）

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